PacketCluster® User's Guide

V5

May 1991

DISCLAIMER OF WARRANTY

Table of Contents

This page left intentionally blank

Introduction

Packet Radio is one of the newest modes of amateur radio communications. In many ways, Packet Radio has been a solution looking for a problem. Until the introduction of PacketCluster, PBBS systems had been the primary application using Packet Radio. PacketCluster is an innovative software package providing DX and contest multiplier announcement and logging capabilities. Traditionally, such systems have utilized voice FM repeaters with all the inherent problems, for example, missed announcements, repeated information, and no announcement history. PacketCluster solves these problems through the use of packet radio with the following features:

- Servicing of multiple users per node

- Networking of multiple PacketCluster nodes

- DX/contest multiplier spotting functions

- WWV propagation logging

- User-to-user talk functions

- Multi-user conferencing

The hardware which connects the computer to the amateur radio transceiver is called a Terminal Node Controller (TNC). Initial versions of TNCs allowed a single point-to-point connection, and therefore, most packet radio applications only allow a single user to be connected at a time. With the advent of Level 2 of the AX.25 data protocol, and TNCs which permitted multiple concurrent connections, it was apparent that the packet radio software technology was lagging that of the TNC hardware.

PacketCluster, which is described in this manual, uses the multi-connect capability of the Kantronics KPC-2 and KPC-4 TNCs, or the Digital Radio Systems Inc PC*Packet Adapter TNC, and therefore is able to service a maximum of 104 users simultaneously (depending on TNC usage). Each station which is running the PacketCluster software is termed a "node". Due to the relatively small number of users that current TNCs can accommodate, PacketCluster permits linking "nodes" together, thereby creating a larger user network than would normally be possible. Additionally, because of the low channel bandwidth and the poor throughput characteristics of packet radio, PacketCluster is capable of utilizing two TNCs, allowing up to four radio ports. This allows putting node communication on different frequencies than the local users.

PacketCluster also provides all of the traditional mail functions that other bulletin board systems provide. In addition, there is automatic forwarding of all bulletin mail messages, bulletin files which are uploaded to one of the nodes in the cluster, and individual user mail messages from the originating node to the node where that user is currently connected. Pictorially, this could look as follows:

```
        K1DG        K1AR                      KR1R        K1KI
                          K1ST
          ( K1GQ )                   W1RR      ( KB1H )
                        K1MM
        KM1C      221.07                 221.07   K1RX      K1CC
                        ( K1EA )
      NH 144.97                                 CT 144.97
                     AK1A      K1MEM

                     MA 144.95
```
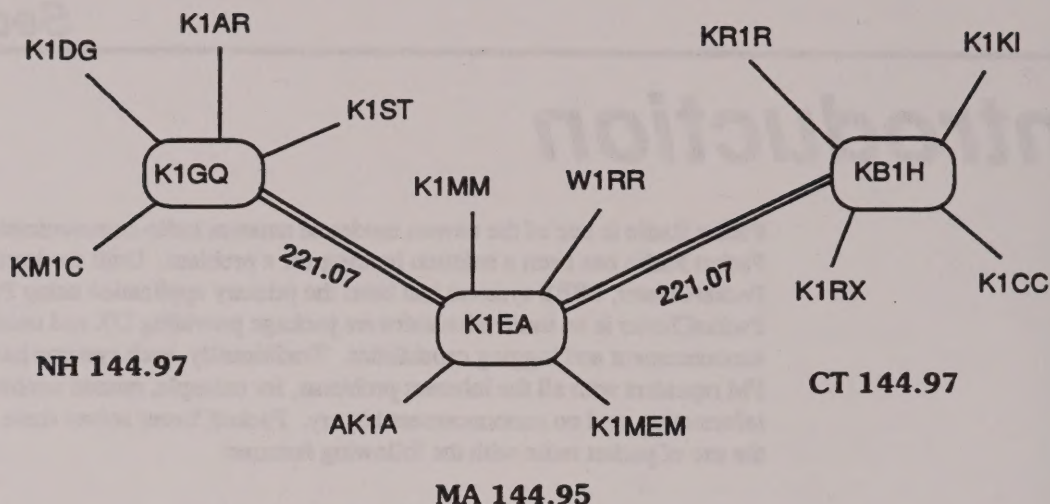
This network, assuming 20 users per node, would support a total of 60 users. In this scenario, the stations are geographically separated, thereby allowing reuse of the local cluster frequency 144.970 MHz as there would not be any interference between the NH cluster and the CT cluster. Notice that all PacketCluster communications are done on 221.07 MHz in this example. In geographically-compact networks, more frequencies would be desirable.

Using the Manual

This manual is divided into three sections: the **Introduction**, **User Topics**, and **User Commands**. In addition, there are two appendices: **User Commands Brief Listing**, and a **DXCC Country List** which gives the prefixes which are valid within PacketCluster.

Section 2, **User Topics**, is designed to give you an understanding of some of the unique features of the PacketCluster software. Section 3, **User Commands**, is a reference manual for the operations available to you in the system. This section is arranged alphabetically.

Throughout this manual, PacketCluster commands are displayed in a distinctive typeface, such as READ, DIRECTORY, etc. Commands may require a qualifier. Qualifiers are additional commands which are appended to the end of a command, and start with a forward slash (/). For example,

DIRECTORY/BULLETIN

is a DIRECTORY command with a BULLETIN qualifier, which specifies that you want a list of all bulletin mail.

User Topics

This section is comprised of various topics which are relevant to the PacketCluster user. These discussions should provide an understanding of the major features of the system and thereby allow you to get the most enjoyment and information from PacketCluster.

The topics covered in this section include the following:

- **TNC Setup** - things to be aware of when setting up your TNC.

- **PacketCluster Performance** - understanding of things which affect system response.

- **PacketCluster Operational Modes** - what modes of operation the user makes use of.

- **PacketCluster Network** - how the network is built and what it means to the general user.

- **Mail and File Systems** - sending and receiving of mail messages and uploading and displaying of files

- **Database Support** - how information databases are supported by PacketCluster.

- **Customizing Your Output** - commands available for controlling your output from the node.

- **DX Filtering** - how to filter out unwanted DX announcements

- **Country Needs Support** - how PacketCluster provides a needs list capability.

- **DX Database Searching** - how to effectively get information out of the DX database.

- **SSID Handling** - how PacketCluster treats SSID information.

- **Troubleshooting** - determining why things don't work.

- **User Command Reference** - reference section of all user commands

TNC Setup

This section deals with some of the things you should be aware of when setting up your TNC to communicate with a PacketCluster station or node. It is not a goal of this discussion to explain how to set up any specific TNC; this is left to the user.

PacketCluster attempts to handle all user input regardless of what TNC is being used. However, some parameters must be set correctly to allow use of all PacketCluster features.

PacketCluster uses a ctrl-Y character to cancel operations such as sending mail, uploading files, or updating databases. Unfortunately, some TNCs use a ctrl-Y to cancel the current packet. If your TNC is set up in this manner, attempts to cancel PacketCluster operations will fail. Check the TNC parameter CANPAC, or whatever the associated parameter is named on your TNC. If it is set to hex value $19 or decimal value 25, you must change it. One possible alternative is to change it to a ctrl-A (hex value $01).

There is also an TNC parameter which causes an additional line feed character to be appended to your input. If you are getting the error message "*** Unrecognized command ***" on all of your inputs to the system, this parameter may be set incorrectly. On the Kantronics TNCs, this parameter is named LFADD and should be OFF.

Packet length should not be an issue for your TNC. PacketCluster can handle incoming packets up to 255 characters in length. It also outputs packets which may be in excess of 200 characters, so you should make sure that your TNC can accept these long packets.

PacketCluster Performance

Performance of the PacketCluster varies, depending on many things:

- Number of users connected to the local node

- Amount of traffic (announcements, DX and WWV reports, etc)

- Database activity

- Available channel bandwidth

- Channel contention

As you can see, each of these factors is beyond the control of the individual user. The bottom line is that at 1200 baud, the amount of information that the channel can accommodate is very limited.

Disk activity also temporarily prevents processing of user input. Therefore, if someone is searching the DX database or updating a database, there may be a lag in responsiveness.

If the system does not immediately respond, understand the above reasons and do not repeatedly hit the return key. This just adds more traffic to the channel and causes even more degraded performance. The watch word is patience!

Operational Modes

As a introduction to how PacketCluster operates, there are several modes of operation available: Command mode, Conference mode, Talk mode, Mail-send mode, and Database-update mode.

Command

Command mode is the default mode when you connect to the PacketCluster and where all commands are input to the PacketCluster. The other modes, however, all require a control character or the text /EXIT on a new line to leave them to return to the normal command mode.

Conference

The two conference modes are entered by doing CONFERENCE and CONFERENCE/FULL commands. In conference mode, all input is sent to any other stations in the same mode. Normal commands entered while in conference mode are ignored by the PacketCluster software. To exit conference mode, you must enter either a ctrl/Z character, or the text /EXIT on a new line.

Talk

Talk mode is entered by doing a TALK command. All further input will be sent to the user you specified on the command. As in conference mode, all normal commands are ignored by the software until you exit Talk mode with either a ctrl/Z character or the text /EXIT on a separate line.

Mail-send

Mail-send mode is the mode which is entered when you do a SEND command. The system will prompt you for the required information about who to send the message to and what the subject of the message is, and then it will accept your message. During this mode, all commands will be ignored by the system, as you are entering message text. At any point, you may cancel your mail message by inputting a ctrl/Y character, or you may complete your message by inputting a ctrl/Z character or the text /EXIT on a new line. At this point, you will be put back into Command Mode, and may continue entering normal PacketCluster commands.

Database-update

This mode is identical to the previous mail-send mode; all text entered is used to update a database. Exit from this mode is via the standard ctrl/Z or /EXIT text on a new line.

PacketCluster Network

PacketCluster is a unique application in many respects, one of which is its ability to link up with other PacketCluster stations into a network. Each station running the PacketCluster software is called a node. The network of PacketCluster nodes is called the cluster.

To the general user, however, whether there is one node or ten nodes in the cluster is irrelevant. Nothing is different other than the fact that more users are connected to the cluster, and therefore more DX, WWV, mail and other traffic.

If you want to see if a particular user is connected, use the SHOW/USER command:

        SHOW/USER AK1A

If AK1A is currently connected, this command gives the node at which he is connected.

An even more useful command is

        SHOW/STATION AK1A

This displays the user's call, where they are connected (if they are connected), their name, QTH, latitude and longitude information, and the date and time of their last connection to the cluster.

In order to see what users are connected, you can use the SHOW/USERS command, but a more useful command is SHOW/CONFIGURATION, as it displays what users are connected to which nodes.

Concepts

This section is a discussion of the concepts of the PacketCluster software, both in the single- and multi-node network. Though this information is not necessary for the general user, it is given to provide insight into the complexities of the system.

When the PacketCluster software starts, it initializes the TNC which is connected to the computer, sets up some internal databases and then waits for either input from the system operator, or a connection from a user.

When a user connects, the TNC informs PacketCluster, which results in that user being entered into an internal database. The software then sends the logon messages to that user. When another user connects, the same process occurs. One of the most important items that the system takes note of is the stream on which each user is connected. When users disconnect, they are removed from the internal database.

At this point, PacketCluster detects and responds to commands. The state of
each user is kept, so that PacketCluster knows, for example, whether the next
input is a subject of a mail message, a file name to upload, or a line of text to be
sent to another user.

When multiple PacketCluster nodes link together to form a network, protocol
messages are continually exchanged. These protocol messages permit the
distribution of DX, WWV, and general announcement information, support of
the cluster-wide user database, talk and conference information, and remote
database access and update to name some of the functions supported. A
PacketCluster network requires one more piece of state information for each user,
that being the node to which the user is connected. Now, when an operation
requires sending information to a user on another node, the software constructs
an appropriate protocol message, sends it to the remote node, which then decodes
the message and sends the information to the user.

To demonstrate how the software works, consider the following PacketCluster
network:
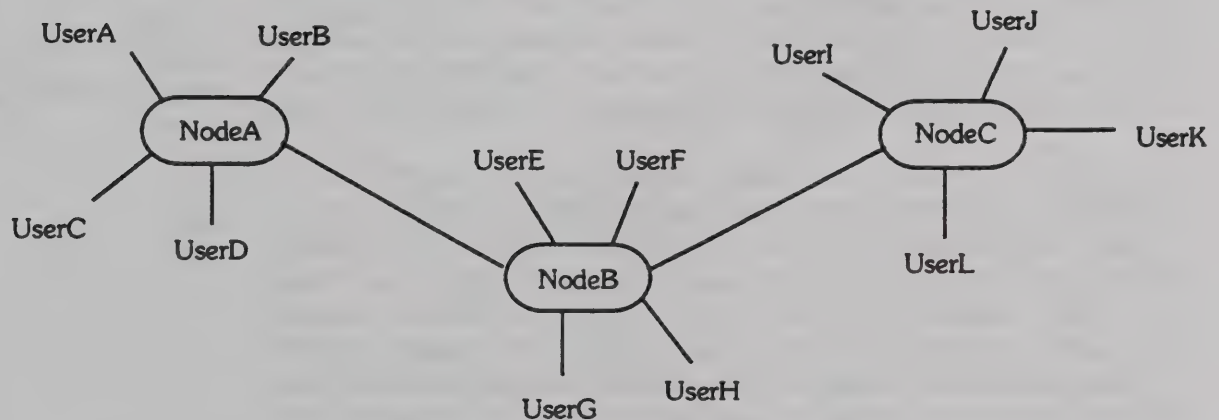
Now suppose that UserD hears 3Y5X on 20 meters. UserD uses the DX
command, and reports this spot:
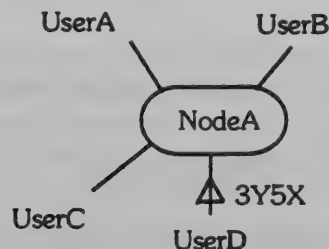
At this point, NodeA detects the command, and then does two things: distributes
the DX spot to all connected users and creates a protocol message with the DX
information and sends it to NodeB:
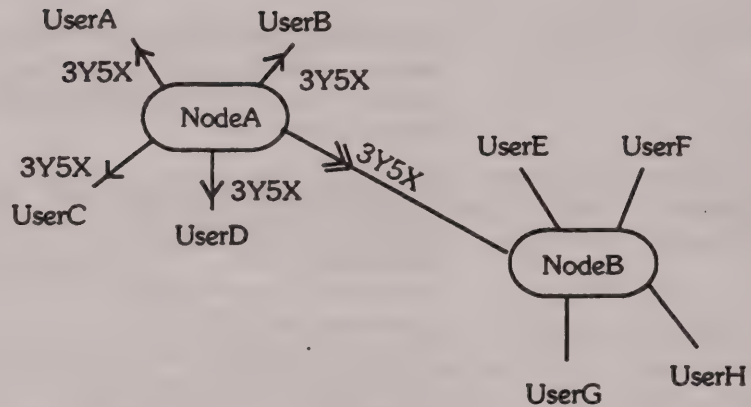
When the DX protocol message is received at NodeB, it is then decoded, distributed to all connected users, and passed on to NodeC, which does the same:
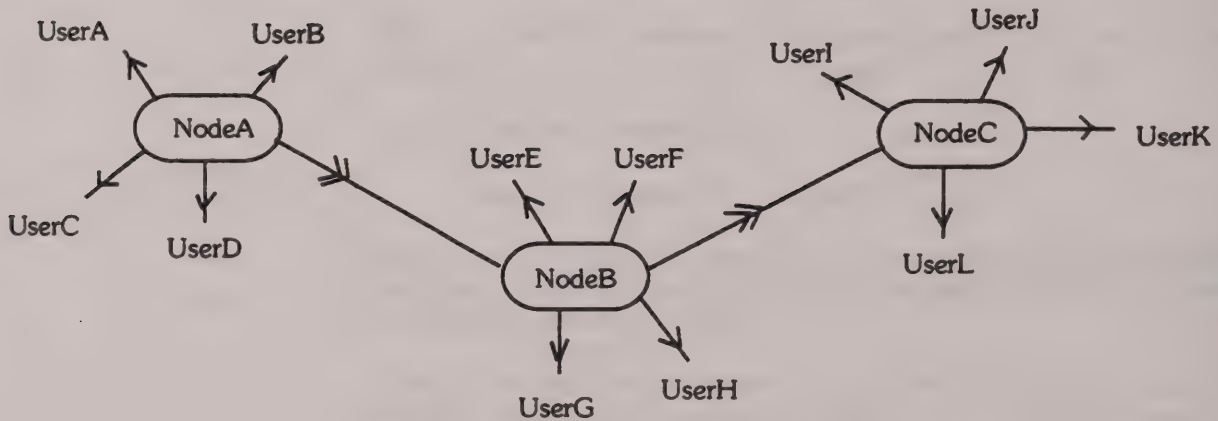
Through these examples, you can see how the network works.

Mail and File Systems

The primary source of confusion for PacketCluster users has been in understanding what "files" and "bulletins" are. Following is a brief attempt to clarify these terms.

A "file" is basically a collection of information (or records) in a structure which the computer can operate on. Everything on the PacketCluster are files, ranging from message files (which users refer to by message number), to files which are uploaded and displayed by PacketCluster users.

A "bulletin" is either a mail message or a file which is automatically distributed to more than one user.

The terms needing definition in the context of the PacketCluster software are the following:

- Normal mail
- Bulletin mail
- Normal files
- Bulletin files

Mail is any message listed with the DIRECTORY command, and displayed with the READ command. Normal mail is that which is sent from one station to another; bulletins, or bulletin mail, is mail which is sent to a bulletin address. Bulletin addresses can be displayed with the SHOW/BULLADDR command. These messages are listed with the DIRECTORY/BULLETIN command. Bulletin mail differs from normal mail in that it is automatically distributed to all nodes in the cluster. Note that the nodes must be connected when the mail is sent; there is no automatic forwarding to nodes which connect after the mail has been initially distributed. You may, however, ask the system operator of your node to manually forward a message to a node which subsequently connects.

Normal files are messages (files) sent to the PacketCluster node with the UPLOAD command. A listing of these files is displayed with the SHOW/FILES command. Files which are thought of as bulletin files, possibly due to their content, and are sent to the PacketCluster node with the UPLOAD/BULLETIN command and displayed with the SHOW/BULLETINS command. Files are displayed with either the TYPE command or the READ command (with an appropriate file area as the qualifier). TYPE displays the file without pause; READ displays the file one screen at a time. If you want to download the file to your system you should use the TYPE command.

File Areas

Before we continue, a point talked about in the previous paragraphs should be expanded upon. The way information is structured on the node computer is in specific areas. We call these areas, *file areas*. For instance, bulletin files reside in the BULLETIN file area, normal files reside in the FILES file area, and so forth. The PacketCluster sysop can also define his own file areas where information is to be kept. For example, he or she may want to set up an area where ARRL propagation bulletins are kept. The name chosen for this file area may be PROP.

There are several PacketCluster commands which operate on file areas, including:

- SHOW
- TYPE
- UPLOAD

For example, if you want to see a list of the files existing in the BULLETIN file area, you would use the command:

SHOW/BULLETIN

In our example above, to see the files in the PROP area, you do:

SHOW/PROP

As you can see, when you specify a file area as a qualifier to a command, you are telling the system which informational area you are dealing with.

Overview

This section describes the mail and file systems on the PacketCluster. Major features of these systems include:

- Normal mail functions among users of a single node

- Automatic forwarding of mail messages to the node where the addressee is connected

- Automatic forwarding of uploaded bulletin files to all nodes in the cluster at the time of the upload

- Automatic forwarding of mail messages to PBBS systems outside the cluster

- Manual forwarding of individual mail messages and files to a specified PacketCluster node

The following sections describe in detail the features listed above.

Normal Mail

All users on an individual PacketCluster node may send and receive mail. The commands providing these functions are SEND, READ, REPLY, DELETE, and DIRECTORY.

A word about sending mail in general. PacketCluster does not automatically wrap lines when the line reaches 80 characters. Therefore, if you are used to typing mail messages without ever hitting the return key, your messages may not be as easily readable as it might be. It is recommended that when you reach the end of a line, you hit the return key. This puts that line on a separate line in the message. If you do not do this, your input is sent when you reach the packet length set in your TNC and your message lines will appear to break randomly.

Mail messages may be addressed to any string of characters. The command
DIRECTORY/BULLETIN displays a list of all messages which have been
addressed to a bulletin address.

The list of bulletin addresses can be displayed with the command
SHOW/BULLADDR. This contains both local, local-cluster, and cluster-wide
addresses. If the address is followed by LOCAL, it means that the address is a
local bulletin; LOCAL_CLUSTER means that it is an address which will be
distributed to only those nodes defined as local; otherwise, it is a cluster-wide
bulletin which is automatically forwarded to all other nodes in the cluster. If you
want to have a new bulletin address created, talk to your sysop who can add
addresses to the list. Also ask your sysop for what nodes are in the local cluster
if you see a local-cluster address.

When mail is sent to you, you will receive a message stating that you have new
mail. If you are not currectly connected when the mail is sent, you will be
informed of the new mail when you next connect. Note that this notification may
not occur immediately when you connect; if the mail needs to be forwarded from
a remote node to your node, it can take several minutes for the mail to reach your
node.

After you read a message which has been sent to you, a hyphen (-) is displayed
next to the message number in the DIRECTORY command output.

Messages may be deleted by either the sender of the message or the recipient of
the message. Of course, the system operator may delete any message.
Additionally, the sysop can setup the software so that messages are automatically
deleted after a certain number of days. If you have a message which you want to
keep, tell the sysop so that he can prevent the automatic deletion. Any messages
which have been prevented from being automatically deleted are shown with a
plus sign (+) next to the message number. If the message has been read by the
addressee and is not to be deleted, an asterisk (*) is displayed next to the
message number.

If you send a bulletin mail message, remember, it is distributed throughout the
cluster. If you delete this message, PacketCluster attempts to delete it cluster-
wide.

Private messages may be sent with the SEND/PRIVATE command. Private
messages are not listed with the DIRECTORY command unless the station is
either the sender or the recipient of the message (or the system operator).
Remember that private messages may still be read by anyone monitoring the
channel when it is read. Private messages, when displayed by a DIRECTORY
command are shown with a "p" next to the message number. The sysop may set
messages to either private or public.

To reply to a message, use the REPLY command. If you want to delete the
message you're replying to, use the REPLY/DELETE command. Note: the
REPLY command is guaranteed to have the correct subject only if it is done
immediately after reading a message.

Mail Message Auto-Forwarding

If you send a mail message to a user who is currently connected to another node in the cluster, PacketCluster automatically forwards this message to the node to which that station is connected. Upon completion of the forwarding operation, the message is deleted on the node on which the message was sent. Therefore, do not be alarmed if you do a DIRECTORY after sending mail, and find that it has disappeared. This is normal.

If the recipient of the mail message is not currently connected to the cluster, the mail message remains on the node on which it was sent. When the station connects to one of the other nodes in the cluster, the mail message is then forwarded to that node, and the station informed of the new mail.

Bulletin File Auto-Forwarding

When a user uploads a bulletin file to a PacketCluster node (with the UPLOAD/BULLETIN command), this bulletin is automatically propagated to all other nodes which are in the cluster at the time of the upload. File forwarding operates in the same manner as mail message forwarding.

External Mail Auto-Forwarding

External mail messages are defined as those messages destined for packet bulletin board systems outside the cluster. In order for external mail forwarding to occur, the sysop must do the appropriate set up. Contact him or her to see if this possible for your cluster.

If external mail is supported, you must specify the proper syntax on the SEND command so that the system detects an external mail message. This is done by any one of the following SEND formats:

```
SEND AK1A
SEND AK1A @K1EA
SEND AK1A @K1EA >K1GQ
```

The first format assumes that there is a forwarding database entry setup on the local node for AK1A. You can determine this by using the SHOW/FORWARD command. When the mail message is sent, the forwarding database contains all the required information about how to forward the message to AK1A.

The second format assumes that there is either a specific forwarding database entry for AK1A, or that there is a default forwarding entry in the database. The @K1EA specifies that K1EA is the bulletin board system to which the mail should be sent.

The third format is an enhancement for a multi-node PacketCluster. It is very likely in such a cluster that only one node will have a connection to the outside world. Therefore, this syntax specifies that the mail message is an external message (by the @K1EA), and that it must first be forwarded (using normal

cluster forwarding) to K1GQ (specified by the >K1GQ). Notice that this is the same mechanism as sending mail in a limited-protocol configuration.

Forwarding of these messages differs from normal cluster forwarding in that the forwarding operation occurs once an hour.

Mail Forwarding and Limited-Protocol

As larger PacketCluster networks are established, limited-protocol connections are sometimes set up to reduce the amount of traffic sent between the nodes. Often the only protocol which is disabled is that which supports the user information. Due to this, users on one cluster do not "see" the users connected to the other cluster.

Mail may be sent from one "cluster" to the other "cluster" normally if the user to which the mail is being sent has done a SET/HOME command. This command sends a protocol message throughout the entire cluster, informing each node where that user normally connects. When mail is sent to this user, the mail is forwarded to this node, even if the user cannot be "seen." You may determine whether the user has done a SET/HOME command by doing a SHOW/STATION command for that user.

If, however, that user has not done a SET/HOME command, you must force the forwarding of your message to the other cluster. This forwarding may be done by any user of the cluster; sysop privileges are not needed.

Suppose you wanted to send a message to K1AR who is connected to some node in a cluster other than your own. Also assume that K1GQ is a node in that cluster, and that K1AR has not done a SET/HOME command. To do this, you merely have to send the message with the following command:

        SEND K1AR > K1GQ

This causes your message to be forwarded to K1GQ, and since K1AR and K1GQ are in the same cluster, the software then delivers the message to K1AR.

Distribution Lists

PacketCluster supports distribution lists for sending mail messages to groups of users. If you have a group of stations that you normally send mail to, you may want to talk to your sysop about setting up a distribution list for your use. For example, if you have a group of friends who are interested in ATV (amateur TV), you could have an ATV distribution list set up, and then you can send mail to ATV.

If you don't need a formal distribution list set up, you can still utilize the distribution list capability by adding special syntax to the end of your mail message. This syntax instructs remote nodes to create copies of your mail message for you. Consider the following example:

```
AK1A ————— K1EA ————— K1GQ
              |
              |——— K1MM
              |
              |——— NO1A
                        |
                        |——— K1MEM
```
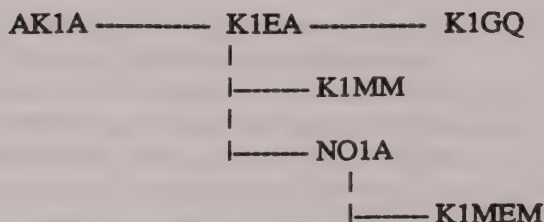
Stations AK1A, K1EA, K1GQ, and NO1A are PacketCluster nodes, and K1MM and K1MEM are users. Suppose I (AK1A) want to create a mail message which includes, K1EA, K1GQ, K1EA, K1MM, and K1MEM. Without any optimization, this would cause 5 mail messages to be sent from AK1A to K1EA. To accomplish this optimization, address the mail message to K1EA, and add the following lines to the end of your message:

```
*>*>*>K1EA K1EA K1GQ K1MM NO1A
*>*>*>K1GQ K1GQ
*>*>*>NO1A K1MEM
```

Note that there is no space between the *>*>*> and the callsign of the particular PacketCluster node. The meaning of these lines is:

- Instruct K1EA to send duplicates of the message to himself, K1GQ, K1MM, and NO1A

- Instructs K1GQ to send the message to himself

- Instructs NO1A to send the message to K1MEM

This, of course, is a limited example, but you can see with large distro lists, the traffic savings on the backbone is significant.

Information Database Support

Another one of the unique features of the PacketCluster software is the support of information databases created by the system operator. These databases can contain any type of information; examples of such databases include QSL manager lists, country want lists, club rosters, contest news, etc.

Databases on the PacketCluster are accessed using SHOW commands. There are two generic types of SHOW commands:

> SHOW/qualifier
> SHOW/qualifier key

The first command usually results in general information about the selected database, while the second command displays information about a particular item in that database.

The actual location of the database is irrelevant to you. All you know is that a request is made to the PacketCluster, and the information is displayed.

Update

Databases may be updated by users of the PacketCluster using the UPDATE command.

Basically, the UPDATE command specifies the database to be updated, what key is to be entered or modified, and what text is to be associated with this key. See the UPDATE command description in Section 3 for details.

Customizing Your Output

The PacketCluster software allows you to customize what output you want to see. You may control whether you see all types of announcements, and what types of DX announcements you want to see. This later function is done by using the DX filtering capability of the software (see the next section). Note that the customization that you do (other than the DX filtering setup) is only for your current login session. If you always want to turn off new mail announcements everytime you connect, you should upload a user login command file to the node. This is done by doing UPLOAD/USERCMD, followed by the commands you want done everytime you connect to that node.

Bells

At many times while you are connected to the PacketCluster node, you may not want the bell sent to your terminal whenever any type of announcement is made. This can be controlled with the following commands:

        SET/BEEP
        SET/NOBEEP

DX Announcements

You may control the output of DX spots to your terminal with the following commands:

        SET/DX_ANNOUNCEMENTS
        SET/NODX_ANNOUNCEMENTS

Login Announcements

Your sysop may set the PacketCluster up so that when users connect or disconnect, an announcement is made to all local users informing them of the fact. If, however, you do not want to see these announcements, you may control them with the following commands:

```
SET/LOGIN_ANNOUNCEMENTS
SET/NOLOGIN_ANNOUNCEMENTS
```

New Mail Announcements

You may want to disable the output of announcements when you receive new mail. This probably would only be done when you are downloading a file and do not want extraneously text inserted into it. The following commands control these announcements:

```
SET/MAIL_ANNOUNCEMENTS
SET/NOMAIL_ANNOUNCEMENTS
```

Talk Messages

Again, you may not want to receive any talk messages. You can control talk messages with the following commands:

```
SET/TALK
SET/NOTALK
```

WWV Announcements

WWV propagation reports can be eliminated from your output if desired. This is done with the following commands:

```
SET/WWV_ANNOUNCEMENTS
SET/NOWWV_ANNOUNCEMENTS
```

Page length

The READ and TYPE commands default to page mode; that is, a certain number of lines are displayed, and then you are prompted whether you want to continue or not. You may, of course, use the /NOPAGE qualifier on these commands to prevent these prompts. Alternatively, you can specify a large page size so that you effectively will not ever get the prompts. By default, a page is 20 lines of output. You may set your personal page size to any number.

```
SET/PAGE line-cnt
```

DX Filtering

PacketCluster allows you to control what DX spots you see at your terminal. This is done by filtering out the spots you don't want to see. The DX filtering capability has two advantages: it doesn't bother you, the user, with spots that are uninteresting to you, and secondly, it reduces the amount of traffic on the channel, making the entire PacketCluster more responsive.

DX filtering is done by band, mode, and DXCC country prefix. Modes are either CW or SSB and bands include 160, 80, 40, 30, 20, 17, 15, 12, 10, 6, and 2 meters. The keyword ALL can be used for the band specification and for the DXCC prefix specification.

The general syntax of the filter command is:

```
SET/FILTER/mode/BAND=(x,x,x) DXCC-prefix(es)
```

Let's look at several examples.

- Filter out G, EA, F, and DL on 10, 15, and 20 meters on both modes:

```
SET/FILTER/BAND=(10,15,20) G,EA,F,DL    or
SET/FILTER/CW/SSB/BAND=(10,15,20) G,EA,F,DL
```

  if the mode is not specified on the command, it defaults to both CW and SSB.

- Filter out all announcements for 6 and 2 meter bands:

```
SET/FILTER/BAND=(6,2) ALL
```

- Filter out G on all bands:

```
SET/FILTER/BANDS=(ALL) G
```

Country Needs List Support

PacketCluster supports a country needs list on both a user and country basis. Three modes are supported: SSB, CW, and RTTY. You can also specify needs on a band basis. The valid bands are:

160, 80, 40, 30, 20, 17, 15, 12, 10, 6, and 2

You may not know what PacketCluster recognizes as a valid prefix for a particular country. In that case, use the command SHOW/PREFIX. For example,

SHOW/PREFIX VP8

displays all prefixes it recognizes which begin with VP8. In this manner, you can determine the appropriate prefix.

Country needs may be set using the SET/NEEDS command, and cleared by using the SET/NONEEDS command. A little experimentation with this command shows how PacketCluster supports this function. Refer to the reference manual in Section 3 for details on these commands.

DX Database Searching

One of the primary motivations for PacketCluster is the announcement and logging of DX information. This section gives the commands available to you to effectively search the DX database.

The database may be searched in the following manners:

- Chronologically
- Band/Frequency
- Frequency range
- Prefix
- Callsign fragment
- Comment text

Note: DX database searching may be limited by the system operator.

Chronologically

The normal command SHOW/DX displays the last five DX spots. You may request more or less spots by specifying the number as a qualifier:

SHOW/DX/10

displays the last ten DX spots.

Band/Frequency

You may search the database by band or frequency. The command

SHOW/DX band/frequency

accepts the following bands or frequencies:

Band	Frequency
160	1
80	3
40	7
30	10
20	14
17	18
15	21
12	24
10	28
6	50
2	144

It does not matter whether the frequency or the band is entered. You may specify a range of frequency in the following manner:

SHOW/DX 28.500-28.600

You may also specify the number of spots desired, for example,

SHOW/DX/10 7

displays the last ten spots on the 40m band.

Frequency Range

You may also display DX spots which lie between two different frequencies. For example, you may want to see all DX spotted betwen 14.000 and 14.025. This can be done as follows:

SHOW/DX 14000-14025

Prefix

To display spots for a particular DX country, you can search by prefix. The general format for the command is:

SHOW/DX prefix

for instance,

SHOW/DX OH0

displays the last five spots of stations whoses call begins with OH0.

Remember, you can combine this with other search criteria:

SHOW/DX/15 10 YB

displays the last fifteen spots of YB (Indonesia) stations on the 10m band.

Callsign Fragment

Just as you can search for a station's prefix shown in the previous section, you can generalize this to look for the specified text anywhere in the callsign. This is done by adding an asterisk (*) to the text:

        SHOW/DX OH*

This displays DX spots such as OH0DX, YB3OH, or OD5OH.

Comments Text

The last search method is to look for text in the comments field of the DX spot. This is done by surrounding the text with a single quote. For example,

        SHOW/DX 'QSL'

displays the last five spots which have the text QSL in the comments field. Note that the text is case insensitive, e.g., it doesn't matter whether the text is specified in upper or lower case. You may search for up to 3 different text fields simultaneously, e.g.:

        SHOW/DX 'QSL' 'MGR' 'VIA'

Again, this search method can be combined with all others:

        SHOW/DX/15 7 OH0 'QSL

which displays the last fifteen DX spots of OH0 stations on the 40m band with the text QSL in the comments field.

SSID Information

SSIDs are the numbers which are sometimes appended to the callsigns of packet radio stations. Typically, these are used primarily to produce a unique callsign for some reason. Also, KA-node and NETROM nodes change these numbers as the station connects through them.

PacketCluster ignores most SSIDs, unless one is needed to make the station unique. For instance, if a station connects via a digipeater, and the callsign which the TNC actually detects is AK1A-15. PacketCluster will strip off the -15 and for all intents and purposes, the station connected without an SSID.

If, however, a station happens to be connected to one node in a cluster, and then connects to another without first disconnecting from the first node, the callsign seen in PacketCluster will be the first unique one, starting at 1. Thus, if AK1A connects to a second node in the same cluster, that incarnation will be AK1A-1. If a connection is made to a third node, that user will be AK1A-2, and so on. Therefore, if you connect and see an SSID which you don't understand, it is

because the software believes you're currently connected to another node. This is not a problem.

Note that PacketCluster ignores *most* SSIDs. Stations using an SSID of -6, -7, -8, or -9 will not have the SSID stripped. There are some instances where you want the SSID to remain; setting it to one of these causes that to happen.

The mail system also ignores all SSIDs. Therefore, AK1A is the same as any other incarnation of AK1A-x, and has access to all mail and may delete it, regardless of who it was sent to.

Troubleshooting

This section deals with common problems which users have, and their possible resolution.

Problem	Resolution
Cannot cancel command with a ctrl-Y character.	TNC setup specifies ctrl-Y is the TNC's cancel packet parameter (CANPAC). You must change this parameter.
All input results in error message *** Unrecognized command ***.	Check TNC parameter LFADD. It should be set to OFF.
Mail messages not formatted correctly.	Make sure you are hitting the RETURN key when you get close to the end of a line. Do not rely on the TNC to send your packet when the maximum packet length is reached.
Can only get a certain number of DX spots even though I request more.	The sysop can limit the number of items which a user can display; you may have reached the maximum.
Can not locate a DX spot I put in last week.	The sysop can limit how many DX records are searched by a user request. The sysop may also have reduced the size of the DX database and removed the spot from the database.
My mail message terminates with the error *** Maximum message length exceeded ***.	The sysop has specified a maximum number of lines in a mail message.

Problem	Resolution
The message I just sent disappeared.	This is the normal operation of the system. If the user you sent the message to is on another node, the software forwards the message to the appropriate node and then deletes the local copy.

User Command Reference

This section provides a reference section on all commands which are available to the general user of the PacketCluster. The commands are listed alphabetically. Most commands can be abbreviated; the required part of the command is shown in uppercase in the syntax section of each command.

ANNOUNCE

The ANNOUNCE command permits users to make general announcements to all stations which are connected to the PacketCluster. If no qualifier is specified on the command, all users on the local node receive the announcement.

The ANNOUNCE command may also be used from within either Conference Mode or Talk Mode by prefacing it with an asterisk (*).

Syntax	Announce message

/callsign

This command allows you to send a general announcement only to those stations which are connected to the PacketCluster node specified by the "callsign" qualifier.

Syntax	Announce/call message
Example	ANNOUNCE/AK1A Hello AK1A users

/distro

This command allows you to send announcements to a distribution list of users. If you wish you create a distribution list, you must talk to your sysop.

Syntax	Announce/distro-name message
Example	ANNOUNCE/CONTEST Hi contesters!

/FULL

This command is necessary if a cluster-wide announcement is desired. All users receive the announcement, regardless of the node they are connected to or what state they are currently in. If this qualifer is not specified, the announcement goes only to users connected to the local node.

Syntax   `Announce/Full message`

/SYSOP

This command specifies that the announcement be made to the console terminals of the PacketCluster node stations and to any privileged users who are connected. This is an easy way for the sysops to coordinate PacketCluster network operations.

Syntax   `Announce/Sysop message`

BYE

This command informs the PacketCluster that you wish to disconnect. If possible, this is the recommended method of disconnecting from the PacketCluster. The PacketCluster, however, detects a stream which disconnects using a TNC D command, and removes that user from the PacketCluster.

Syntax   `Bye`

CONFERENCE

The CONFERENCE command puts you into Conference Mode. Conference Mode allows you to talk simultaneously with all other stations in Conference. There are two distinct conferences: a local conference restricted to those users on the same PacketCluster node, and a cluster-wide conference which allows users on different nodes to participate in the same conference.

All input (except for special commands) from each station in Conference Mode is retransmitted to all other stations. This works well with a small number of stations with a relatively high rate of input. As the number of stations in Conference Mode grow, the rate of input has to decrease to make it a viable medium of communication, as the available bandwidth at 1200 baud will quickly become saturated. As the technology advances, and TNCs become available with higher speeds, the input rates and number of stations can increase.

Note: By default, if no qualifier is specified on the CONFERENCE command, the user will go into the local conference on that PacketCluster node. If the cluster-wide conference is desired, the /FULL qualifier must be specified.

Syntax   CONFERence

/FULL

This qualifier command informs PacketCluster that you wish to join the cluster-wide conference. Input while in the full conference is distributed to all nodes. This conference is distinct from the local conference mode on each individual node.

Syntax   CONFERence/Full

DELETE

This command deletes a particular mail message. Mail messages may only be deleted by either the originator of the message, or by the station to whom the mail is addressed. An attempt to delete someone else's mail causes the error "No access to message" to be displayed.

If a message number is not specified with the DELETE command, the last mail message read is deleted, assuming you have access to the message.

Multiple messages may be deleted on one command, by separating the message numbers by commas, or by specifying a range (for example 30-57).

Bulletin messages may only be deleted by the originator of the message. The system operator, of course, may delete any message on the PacketCluster. When a bulletin message is deleted by the sender, a message is sent to all other nodes in the cluster to delete this message, if it exists. If the sysop wants to delete a bulletin sent by someone else, and wants it to be deleted cluster-wide, the command DELETE/FULL must be used.

Syntax   DElete **message-#**
                  DElete **message-#,message-#,message-#**
                  DElete **message-#-message-#**
                  DElete

DIRECTORY

This command displays what mail exists on the local PacketCluster node. A DIRECTORY command without any qualifiers display the five most recent messages, or all new mail messages since the last use of the DIRECTORY command, whichever is greater. If you wish greater or fewer messages listed, use the additional qualifier /nn when nn is some number. Private messages, however, are not displayed unless the user is the originator or the addressee of the message.

If a callsign is specified on the DIRECTORY command, only mail in which that user is either the sender or the addressee is displayed.

After a message has been read by the user to whom it is addressed, a hyphen (-) is displayed next to the message number. If the message has been set to no auto-delete, a plus sign (+) is displayed. If the message has both been read and set to no auto-delete, an asterisk (*) is displayed. Finally, if the message is private, a "p" is displayed.

There are several qualifiers which are acceptable on the DIRECTORY command. These are explained in the next sections.

Syntax	DIrectory/**qualifier**
	DIrectory/**qualifier**/**nn**
	DIrectory/**qualifer call**

/ALL

This command displays the complete list of active messages on the local PacketCluster node. Private messages will not be displayed unless you are either the sender, the addressee, or the system operator.

Syntax	DIrectory/All

/BULLETINS

This command displays all bulletins which are active on the local PacketCluster node. A bulletin is defined as a mail message which has been sent to a bulletin address (defined by the sysop in BULLETIN.LST).

Syntax	DIrectory/Bulletins

/NEW

The command displays all new mail messages since the last use of the DIRECTORY command.

Syntax	DIrectory/New

/OWN

This command lists all messages addressed to your callsign, or sent by you.

Syntax	DIrectory/Own	

/SUBJECT

This command displays all mail messages with the specified text somewhere within the message subject.

Syntax	DIrectory/Subject **text**	

/nn

This command allows specification of a certain number of message directory entries to display or specific range of entries. If a range of entries is specified, it is the actual message numbers which should be entered.

Syntax	DIrectory/**nn**	
	DIrectory/**start-end**	
Example	DIRECTORY/10	**display 10 entries**
	DIRECTORY/103-110	**display messages 103 through 110**
	DIRECTORY/10-	**display entries from message 10 to end**

DX

This command provides a DX spotting and logging capability in the
PacketCluster. This command announces the frequency and call of a DX station,
as well as brief information concerning that station. The associated command,
SHOW/DX, displays previously announced DX information.

The DX information is retransmitted to all connected stations and includes the
logging station's call and the date and time of the logged information. Note that
all announced and logged frequencies are in KHz, regardless of how they are
entered.

Syntax	Dx **frequency station-call information**
Example	DX 14001 HZ1HZ listening up 2

/callsign

This command allows you to credit another station with the DX spot.

Syntax	Dx/**callsign frequency station-call info**
Example	DX/AK1A 14001 HZ1HZ
	causes AK1A to be the logging station in the SHOW/DX **display.**

EXECUTE

This command is used to execute a personal command file. This command will
only function if the PacketCluster is setup enabling user command files
(ENABLE/USECMD). The user may upload their own command file using the
UPLOAD/USERCMD command.

Syntax	EXECUTE

FINDFILE

This command searches the BULLETIN, FILES, and ARCHIVE file areas, and any other sysop-defined file areas for the specified file, or for any files whose names which satisfy the specified file name mask.

Syntax	Findfile **file or mask**	
Example	FINDFILE ARRLDX.LST	**locate file ARRLDX.LST**
	FINDFILE ARRL*.*	**locate all files starting with ARRL**

HELP or ?

This command displays an abbreviated list of all of the commands available on the PacketCluster. More detailed information on a particular command is displayed if you add the command after the HELP command, e.g. HELP CONFERENCE provides detailed help on the CONFERENCE command.

Syntax	Help
	Help **command**
	?
	? **command**

READ

This command reads a particular mail message on the local PacketCluster node. By default, all mail messages are public messages and may be read by anyone.

You may specify a message number if you want to read a specific message; a READ command without a number reads the next mail message addressed to you. This is handy if you have several new mail messages to read, or if you receive a message that you have just received new mail from another user; a simple READ command then reads that new mail.

Note: Reading mail without specifying a message number reads your oldest unread mail first.

The READ command defaults to reading messages by page. This means that after 20 lines of output, the user is displayed a message saying to press enter to continue or /EXIT to abort. This allows the user to abort long mail messages which they may not want to read in their entirety. If, however, you want to read a message without the continuation prompts (for instance when the user is downloading the message to their system), use the /NOPAGE qualifier.

Syntax   Read
           Read **message-#**
           Read/Nopage **message-#**

REPLY

The REPLY command may be used immediately after a READ command to reply to the previously-read message. If you attempt to do a REPLY command without having previously read a message, an appropriate error message is displayed.

The REPLY command puts you into message send mode, the mail is sent to the originator of the message you just read, and the subject is the same as the previous message except that it is prefaced with the text "Re:". Operation of this command is demonstrated by the following example:

```
READ 123
Message #123  From: W1AAA Subject: topic

REPLY
Message #124  To: W1AAA  Subject: Re: topic
```

Note: The subject field is guaranteed to have the expected text only if the reply is done immediately after having read a mail message. Other operations may alter this information.

Syntax   REPly

/DELETE

This command is identical to the normal REPLY command, except that after the message reply is sent, the mail to which the user was replying to is deleted.

Syntax   REPly/Delete

/RR

This qualifier causes a return receipt message to be sent back to the sender when the message is read by the user to which it was sent.

Syntax   REPly/RR

SEND

This command sends a mail message on the PacketCluster. This command sends either a public or private message (depending on how the local PacketCluster is set up) to whomever it is addressed. Mail may be sent to a list of stations, or to multiple stations via a distribution list which can be set up by the sysop. You can always send a private message using the SEND/PRIVATE command, and a public message using the SEND/NOPRIVATE command. Remember, private messages cannot be read by anyone other than the originator or the addressee (and the system operator), but it does NOT stop someone from monitoring the channel and reading it as you read it.

You may initiate the message send either by the SEND command alone with the PacketCluster prompting for all required information, or by SEND call (e.g. SEND W1AAA) with the PacketCluster prompting for the subject and the message text.

If your PacketCluster has been set up to allow mail forwarding to other PBBS systems, you may specify the PBBS on which the remote station resides by doing the following SEND command:

        SEND AA1A @K1ABC

The subject may be a maximum of 30 characters in length. The message text is terminated by a ctrl/Z or a /EXIT as the last line of the message. If you wish to cancel the mail message that you are sending, you may do so by sending a ctrl/Y to the PacketCluster.

        Syntax   Send
                            Send call
                            Send call,call,call,call

/COPY

This command sends a copy of the specified mail message to the user specified. The resulting message begins with a line stating that the message is a copy of a message, and it gives the original sender and addressee.

        Syntax   Send/Copy message-# address

/PRIVATE
/NOPRIVATE

These commands are identical to the normal SEND command except that the message is either a private message or a public (noprivate) message. These qualifiers may be necessary depending on how the PacketCluster has been configured. For example, the PacketCluster may be set up so that all mail messages default to private. In this case, you would need to add the /NOPRIVATE qualifier to send a public message. This qualifier is not necessary

if the address of the mail is defined as a bulletin address such as ALL. If, on the other hand, mail messages default to public, you would have to use the /PRIVATE qualifier to send a private message. This means that the message can only be read by either the originator of the message, or the station to whom the mail is addressed. The mail message does not show up in the message directory commands unless you have access to the message.

Syntax	Send/Private
	Send/Private **call**
	Send/NOPrivate

/RR

This qualifier requests a return receipt (RR) when the mail is read. Speciifically, when the mail is read by the addressee, a mail message is automatically generated by the software back to the sender, informing him or her that their mail has been read.

Syntax	SEND/RR

SET

The SET command is used to change individual parameters. This section is arranged alphabetically.

/ALIAS
/NOALIAS

This command allows you to specify an alias call to the PacketCluster software. This is primarily for households that have two hams which both need to use the same packet station. For example, if K1AA and K1BB need to use the same packet station, K1AA could connect to the PacketCluster node with his own call. Then, the following command would be entered:

```
SET/ALIAS K1BB
```

This informs the node that talk messages or mail to K1BB should be sent to the stream which is actually K1AA. Use the SWITCH command to change the active callsign on your stream.

To clear the alias, use the SET/NOALIAS command.

Syntax	SEt/ALias call
	SEt/NOALias

/ANSI
/NOANSI

These commands control whether the PacketCluster sends ANSI escape sequences to your terminal.

Syntax	SEt/ANSi
	SEt/NOAnsi

/ANSI/ALT

The normal reverse video sequence is ESC [7 m. This is what is sent to a user's terminal if they have enabled ANSI mode. However, some terminals do not understand this sequence, but do understand the alternate sequence ESC G 4. If this is the case, the user should use the /ALT qualifier on the SET/ANSI command.

Syntax	SEt/ANSi/Alt

/BEEP
/NOBEEP

These commands allow the user to enable or disable the alert beeps for all types of announcements, DX, WWV, and general announcements. Alert beeps are normally enabled for all users; if the user disables them, they remain disabled only for the current session.

Syntax	SEt/BEep
	SEt/NOBEep

/DX_ANNOUNCEMENTS
/NODX_ANNOUNCEMENTS

These commands allow a user to turn on or off the display of DX announcements. This command may be useful if the user is downloading a message and doesn't want any DX spots to be entered in the file, for example. DX announcements are normally enabled for all connected users; if the user

disables them, the state is only valid during the current session. If the user disconnects and reconnects, DX announcements will be re-enabled.

Syntax	`SEt/DX_announcements`
	`SEt/NODX_announcements`

/FILTER
/NOFILTER

These commands control what DX country announcements are being filtered by the software to prevent output to your terminal. The filter is done by band, mode, and DXCC prefix. See the discussion **DX Filtering** in this section for details.

/HERE
/NOHERE

These commands inform the PacketCluster and other users as to your availability. In particular, the SET/HERE causes parentheses to be removed from your call which resulted from a SET/NOHERE command. The user's prompt line also reflects the HERE status.

Syntax	`SEt/Here`
	`SEt/NOHere`

/HOME_NODE

This command is used to specify a "home" node for each user. PacketCluster uses the home node concept to send mail to the node which a user normally connects, thereby reducing the amount of time between when a user connects, and when he or she receives their mail. Even more useful, the software also uses this information if the user is connected on the other side of a limited-protocol node connection. If the home node information has been specified, talk messages and mail will use it to automatically direct it to the appropriate node. Home node information is kept in the ASCII file HOMENODE.LST.

Syntax	`SEt/HOMe_node` **node-call**

/LOCATION

This command allows you to specify your latitude and longitude. This information is used by PacketCluster for Maximum Usable Frequency (MUF) and beam heading calculations.

PacketCluster distributes this information to any other nodes which are connected in the cluster so that this information is available from each node.

Syntax	`SEt/LOCATion lat-deg lat-min N/S`
	`long-deg long-min E/W`
Example	`SET/LOCATION 45 15 N 71 30 W`

/LOGIN_ANNOUNCEMENTS
/NOLOGIN_ANNOUNCEMENTS

These commands allow users to disable or enable announcements when users log into or out of the PacketCluster network. Each PacketCluster node may be set up to make these announcements or not, depending on how the sysop wants the node to operate. However, if the node does send out these announcements, individual users can choose not to see these announcements with these commands. If the node is sending out login announcements, all users normally receive these messages. Therefore, if a user disables them, they remain disabled only for the duration of the current session.

Syntax   SEt/LOGin_announcements

SEt/NOLOGin_announcements

/MAIL_ANNOUNCEMENTS
/NOMAIL_ANNOUNCEMENTS

These commands allow a user to enable or disable the announcement when they receive new mail. This capability is most useful during a download of a message when any alerts are unwanted. New mail alerts are normally sent to all connected users; if the user disables them, they remain disabled only for the current session.

Syntax   SEt/MAIL_announcements

SEt/NOMAIL_announcements

/NAME

This command allows you to specify your name to the PacketCluster. This information is displayed on subsequent connections to the PacketCluster, and on any SHOW/USER command which specifies your callsign. A maximum of 21 characters may be specified for your name.

PacketCluster will distribute this information to any other nodes which are connected in the cluster so that this information will be available from each node.

Syntax   SEt/Name **name**

/NEED
/NONEED

These commands permit the user to define whatever country needs they have for CW, SSB, and/or RTTY modes. Country needs may also be specified by band (valid bands include 2, 6, 10, 12, 15, 17, 20, 30, 40, 80, and 160 meters). Each SET/NEED command is sent to the node maintaining the needs databases. The /n qualifier is used to specify which needs database is to be used. Up to five needs databsses may be used, so /n should be 1-5. If no mode qualifiers are specified on the command, /CW and /SSB are assumed. See the SHOW/NEED

-command for displaying country needs information. The SET/NONEED
command removes previously-entered needs information.

Syntax	SEt/NEed/**mode/mode**BAND=**(band,band,...)**
	prefix,prefix,...
	SEt/Need/**n/mode/mode**/BAND=...
	SEt/NONEed/**mode/mode**/BAND=**(band,band,...)**
	prefix,prefix,...
	SEt/NONEed/**n/mode...**
Example	SET/NEED YA,ZA
	SET/NEED/SSB 3Y
	SET/NEED/CW/RTTY/BAND=(40,80) 5V,ZA
	SET/NEED/3/SSB 3Y

/PRIVILEGE
/NOPRIVILEGE

These commands enable or disable system operator privileges. The
SET/PRIVILEGE command causes PacketCluster to respond with four random
numbers, which correspond to character positions within the system operator
password. The user should then respond with those four characters. If they are
valid, system operator privileges are granted to that user. You do not receive an
indication as to whether the password was accepted or not. This allows the user
to input several SET/PRIVILEGE commands and monitoring users will not
know which one was accepted.

If you receive an error message back saying that the SET/PRIVILEGE
command is disabled, this means that the sysop has not defined a password.

The SET/PRIVILEGE command is the only way to gain access to the sysop
RCMD command. Stations which receive sysop privileges by means of the
REMSYSOP.LST database must still do a SET/PRIVILEGE command if they
wish to use the RCMD command.

Syntax	SEt/NOPRIVIlege
	SEt/PRIVIlege

/PAGE

This command allows you to specify the number of lines you want to see in a
page. After a page has been sent to you, the system will prompt you to either
continue or abort the current output.

Syntax	SEt/Page **line-cnt**

/QTH

This command allows you to specify your city to the system. This information
will be displayed on subsequent SHOW/USER your-call commands. QTH
information can be a maximum of 80 characters.

PacketCluster distributes this information to any other nodes which are connected in the cluster so that this information is available from each node.

Syntax	SEt/Qth **city**

/TALK
/NOTALK

These commands allow users to disable or enable talk messages to themselves. If a user sends a talk message to a user who has disabled talk, they will receive a message to that effect. Talk messages are normally enabled for all connected users; disabled talk messages only remain disabled for the current session.

Syntax	SEt/TAlk
	SEt/NOTAlk

/WWV_ANNOUNCEMENTS
/NOWWV_ANNOUNCEMENTS

These commands allow the user to enable or disable the display of WWV announcements. WWV announcements are normally enabled for all connected users; if the user disables them, they remain disabled only for the current session.

Syntax	SEt/WWV_announcements
	SEt/NOWWV_announcements

SHOW

The SHOW command is used to display information on the PacketCluster. This information may be mail messages or files which reside on the node, information about a particular user, or DX, WWV, or other announcements. see specific information dealing with the operation of the PacketCluster node. SHOW commands are also used to display information which resides in custom databases which reside on the local or on a remote node.

/ANNOUNCEMENTS

This command displays previous announcements which have been made on the PacketCluster network. You may add an additional qualifier with the number of announcements you wish to see. Also, if you include some text on the command, only announcements which include that text are displayed.

Syntax	SHow/ANNouncements
	SHow/ANNouncements/**nn**
	SHow/ANNouncements **text**

/ARCHIVE

This command displays the list of files on the PacketCluster which have been moved from both the general files area and the bulletin area to a special archive

area. All files listed in the display may be viewed by using the TYPE/ARCHIVE or READ/ARCHIVE commands.

Syntax   SHow/Archive

/BULLADDR

This command displays the list of addresses considered bulletin addresses. If the text LOCAL follows the address, it is a local bulletin; otherwise, the message is distributed cluster-wide.

Syntax   SHow/BULLAddr

/BULLETINS

This command displays what bulletins files are available on the PacketCluster for viewing (using the TYPE/BULLETIN or READ/BULLETIN commands). Remember, these are not bulletin mail messages, but files which have been uploaded to the PacketCluster with the /BULLETIN qualifier.

Syntax   SHow/Bulletins

/CLUSTER

This command displays a summary of the current PacketCluster configuration. The number of nodes in the cluster, as well as the local and total numbers of users and maximum user count is shown. An uptime counter is also displayed, giving the number of days, hours, and minutes since the last reboot.

Syntax   SHow/CLuster

/COMMANDS

This command displays what SHOW commands have been defined by the system operator. These SHOW commands are used to access databases which have been defined by the sysop.

Syntax   SHow/COMmands

/CONFIGURATION

This command displays the actual physical configuration of the PacketCluster. In particular, it shows which users are running the PacketCluster software, and to which node each of the users is connected.

You may specify a PacketCluster node on this command to see what stations are connected to that node.

	Syntax	SHow/Configuration
		SHow/Configuration **call**

/CONFIGURATION/NODES

This command displays what nodes are connected locally and what nodes are reachable via each of them.

	Syntax	SHow/Configuration/Nodes

/DATE

This command displays the current date.

	Syntax	SHow/DAte

/DISTRO

This command displays either a specific mail distribution list, or all distribution lists which exist.

	Syntax	SHow/Distro
		SHow/Distro **distro-name**

/DX

This command is used in conjunction with the DX command to provide a DX spotting and logging capability on the PacketCluster. This command displays previously logged DX information. The user may specify the amount of information they want to see, and for what band, if desired. Refer to the section **DX Database Searching** for details on this command.

Syntax	SHow/Dx/*nn* **band search-string**	
Examples	SHOW/DX	**[last 5 spots regardless of band]**
	SHOW/DX/18	**[last 18 spots regardless of band]**
	SHOW/DX 20	**[last 5 spots on 20m]**
	SHOW/DX/25 14	**[last 25 spots on 20m]**
	SHOW/DX 14 OH0	**[last 5 spots on 20m of OH0 call]**
	SHOW/DX/D2	**[spots for last 2 days]**
	SHOW/DX 28500-28600	**[spots between 2 freqs]**

/EXCLUDE

This command displays the list of users who are excluded from receiving any output from your PacketCluster node. This is useful in permitting contest operators in the single-op category to input multiplier announcements, but not receive any which would nullify their single-op status. This list is kept in the

ASCII file EXCLUDE.LST, and may be manipulated with the SET/EXCLUDE and SET/NOEXCLUDE commands, or with a standard text editor from within DOS.

> **Syntax**   SHow/Exclude

/filearea

This command displays what files are available in the file area which is specified. The sysop can also specify the CMD, CONNECTS, DB, DISTRO, and MSG file areas. These files may be displayed using the TYPE/filearea or READ/filearea commands.

> **Syntax**   SHow/**filearea**
> **Example**   SHOW/PGM

/FILES

This command displays what files are available in the general files area of the PacketCluster. These files may be displayed using the TYPE/FILES or READ/FILES commands.

> **Syntax**   SHow/FILES

/FILTER

This command is used to display the status of your DX filtering for the specified DXCC prefixes. The results of this command show what bands are being filtered for the DXCC prefixes entered and for what mode.

> **Syntax**   SHow/FILTer **dxcc-prefix,dxcc-prefix,...**

/FORWARD

This command displays the mail forwarding database which is being used by the PacketCluster. The database contains the destination call, the PBBS on which that station is found, the call of the next station to which this mail should be forwarded, and the start and stop hours when mail forwarding should occur.

An entry with a destination call of asterisk (*) is the default forwarding entry. Therefore, if mail is sent to a station and a PBBS is included on the SEND command (@call), the mail will be forwarded to the next station in this entry if a forwarding entry for the specific call is not found.

> **Syntax**   SHow/FOrward

/HEADING

This qualifier calculates a beam heading to the specified DXCC country. If you have previously entered the latitude/longitude information for your station by using the SET/LOCATION command, the beam heading is calculated for your QTH. If no location information is found for your station, the location of the PacketCluster system operator station is used. If this information is also not available, an error message is displayed.

The reciprocal heading which is calculated by this command is *not* the long or short path heading. It is the heading that the station in the country you specified on the command should use to optimize the signal back to you.

> **Syntax**   SHow/Heading **dxcc-px**

/INACTIVITY

This command displays the status of the inactivity function (enabled or disabled) and if it is enabled, the value of the inactivity timer. If the function is enabled, users will be disconnected due to inactivity after the number of hours specified by the inactivity timer value.

> **Syntax**   SHow/Inactivity

/LOCATION

This command displays the latitude/longitude information for the station specified on the command. If no station is specified, it displays the information for your station.

> **Syntax**   SHow/LOCation **call**

/LOGON_MESSAGES

This command displays the logon messages which have been set up. There are a total of five logon messages which may be defined with the SET/LOGONx commands.

> **Syntax**   SHow/LOGOn_messages

/MUF

This command displays the maximum usable frequency (MUF) to the specified DXCC country. The latitude/longitude information for your station, or the PacketCluster system operator station will be used in the calculation. If neither location information exists, an error message will be displayed.

> **Syntax**   SHow/Muf **dxcc-prefix**

/NEEDS

This command displays a portion of the country needs database. You may specify either a DXCC country prefix or a user callsign. If a prefix is entered, all user calls who have entered that they need this country are displayed; if a user call is entered, all country prefixes which this user needs are displayed. The /n may be used to specify a specific needs database, where n is 1 - 5. The mode qualifier may be either "SSB", "CW", or "RTTY".

       Syntax   SHow/NEeds **prefix**
                              SHow/NEeds **call**
                              SHow/NEeds**/n/mode call**

/NOTICE

This qualifier displays the notice text which the system operator has previously specified with the SET/NOTICE command.

       Syntax   SHow/NOTice

/PREFIXES

This command displays the country prefixes which PacketCluster knows about which start with the specified text. This is useful in determining the correct prefix for use with the SET/NEED command.

       Syntax   SHow/Prefix **text**

/STATION

This command displays information for the specified station call. The information includes the user's name, QTH, latitude/longitude, what node they are connected to, and the time and date of their last connection to the cluster.

       Syntax   SHow/STation **call**

/SUN

This command displays the sunrise and sunset times for the specified DXCC country. These times are in UTC. If the country is large, for example, Australia, different areas or possible call areas will be displayed. If no DXCC country prefix is specified, the sunrise and sunset times for your QTH are displayed, provided that you have previously input your latitude and longitude information with the SET/LOCATION command.

       Syntax   SHow/SUn
                              SHow/SUn **dxcc-prefix**

/TIME

This command displays the current time. If, however, you specify a DXCC prefix on the command, the system will display the local standard time in that DXCC country.

Syntax   SHow/Time
         SHow/Time **dxcc-prefix**

/USERS

This command displays what other stations are currently connected to the PacketCluster. If an asterisk (*) appears next to a callsign in the display, it signifies that station is currently in Conference Mode. A plus sign (+) signifies that the station is in local Conference Mode. Parentheses around a callsign informs you that station has done a SET/NOHERE command, meaning that they are connected to the cluster, but not really available for conversation, etc.

If a callsign is specified on the command, the name and QTH of that user is displayed if that user has previously entered the information by using the SET/NAME and SET/QTH commands. If that user is currently connected to the cluster, the node to which they are connected is displayed.

Syntax   SHow/Users
         SHow/Users **call**

/VERSION

This command displays the software version level of the PacketCluster software.

Syntax   SHow/Version

/WWV

This command displays recent WWV propagation information which has been logged through use of the WWV command. If no number of entries is specified, the PacketCluster displays the five most recent entries. You may specify the exact number, *nn*, of entries you wish to see.

Syntax   SHow/Wwv
         SHow/Wwv/***nn***

/WX

This command displays recent weather (WX) announcements.

Syntax   SHow/WX

SWITCH

This command is used to switch the current call of your stream between the actual call and the one specified on the SET/ALIAS command. This is used primarily when two hams need to use the same packet station.

        Syntax   SWITCH

TALK

This command permits talking to other stations connected to the PacketCluster. There are two forms of the TALK command: normal Talk Mode and a one-line talk function. These are described below:

        Syntax   TALK **call**

This command is used to talk to any other station connected to the PacketCluster. Once having done this command, all further input is sent to the other station until you send a ctrl/Z character.

It should be noted that this is a one-way talk mode, i.e., if two stations want to enter into a normal conversation, both stations must do the appropriate TALK command. Likewise, to terminate the session, both stations must send a ctrl/Z character or /EXIT on a new line.

        Syntax   TALK **call message**

This version of the talk command sends a one-line message to the specified station. This makes it very easy to send a quick message to someone, without having to actually go into Talk Mode.

Since this doesn't put you into Talk Mode, no terminator (ctrl/Z) character is required. The one-line talk command is available within both Conference and Talk Modes by prefacing it with an asterisk (*).

Limited Protocol Use

The PacketCluster software has the ability to limit the types of information which is passed between the nodes. The user information is often limited when two distinct clusters connect (for example, the YCCC cluster in New England and the NY/NNJ cluster) to reduce the amount of traffic on the connection. In this case, you can still do one-line talk messages to users in the remote cluster, even though

you can not see their callsign in the SHOW/USERS or SHOW/CONFIGURATION displays.

If the user to which you want to send a talk message has previously done a SET/HOME command, you may send one-line talk messages in the manner described above. In order to tell whether the user has done the SET/HOME command, do a SHOW/STATION for that user. If the home node information is displayed, you may use the above methodology. If not, you must use the following syntax to send the talk message:

> TALK user-call > remote-node-call

For instance, suppose you were in the NNJ cluster and wanted to talk to K1AR who is in the YCCC cluster. All you have to do is pick one of the nodes in the YCCC cluster (doesn't matter which one), and do the command:

> TALK K1AR > K1GQ Hi John!

This directs your talk message into the YCCC cluster, and its delivery is then handled by those nodes. One caveat is that you will not get an error message if K1AR is not connected when you do the command.

TYPE

The TYPE command displays a file on the local PacketCluster node. Any file which is displayed using the SHOW/ARCHIVE, SHOW/FILES, or SHOW/BULLETINS commands (and any SHOW/filearea commands which have been defined by the system operator) may be specified.

If you wish to display the file which was listed with the SHOW/ARCHIVE command, you would use the TYPE/ARCHIVE command. If no qualifier is specified, the BULLETIN files area is assumed.

Note that this command is analogous to the "D" or download command on basic PBBS systems.

The TYPE command defaults to displaying 20 lines of text at a time. If you want to see the entire file without pause, use the TYPE/NOPAGE command.

Syntax

TYpe **filename**
TYpe/**qualifier filename**
TYpe/*nn* **filename**
TYpe/NOPAGE **filename**
TYpe/**qualifier/***nn* **filename**

UPDATE

The UPDATE command allows the users of the PacketCluster to update databases which have been created and defined by the sysop. The command to initiate the update process is UPDATE/database. The system then prompts for a key value (or other information if the sysop has defined template files for the update procedure), followed by the text which should be associated with this key. Termination of the text is done with a ctrl/Z or /EXIT command. To cancel the abort, enter a ctrl/Y.

Syntax	UPDate/**database**
Example	UPDate/QSLNEW

/APPEND

A normal database update overwrites whatever is currently in the database for the specified key. If, however, you merely want to add some information to the entry, you should use the /APPEND qualifier. If this qualifier is specified, any information that you enter is appended to the current database entry.

Syntax	UPDate/**database**/APPEND
Example	UPDate/QSLNEW/APPEND

UPLOAD

This command informs the PacketCluster that you want to upload a file to it. You may upload either normal files or bulletins, denoted by the qualifier, /FILE or /BULLETIN. If no qualifier is specified, the default is a normal file; the resultant file will exist in the FILES area. You may also upload files to any defined file area by specifying it on the command. For instance, if the sysop has defined a DOS area, you can upload to it by doing an UPLOAD/DOS command.

Syntax   Upload/**filearea**
                      Upload/**filearea**/OVERwrite

/BULLETIN

This command specifies that you are uploading a bulletin file. The uploaded file is placed in the bulletin area on the PacketCluster and is shown on subsequent SHOW/BULLETINS commands.

Syntax   Upload/Bulletin
                      Upload/Bulletin/Overwrite

/FILE

This command specifies that you are uploading a general file to the PacketCluster. The uploaded file is placed in the files area on the PacketCluster and is shown on subsequent SHOW/FILES commands. This is the default.

Syntax   Upload/Files
                      Upload/Files/Overwrite

/USERCMD

This command specifies that you are uploading your personal command procedure. This procedure is just a list of commands which you want executed each time you connect to the PacketCluster node.

For example, you may want to put a SHOW/DX, DIRECTORY, and any session-specific parameters (such as SET/PAGE) commands in it.

Syntax   Upload/Usercmd

WWV

This command allows you to announce and log propagation information which is heard on station WWV at 18 minutes past each hour. PacketCluster only accepts reports for each 3 hour period, as that is how often WWV modifies the information. Previous information can be displayed by using the SHOW/WWV command.

Syntax   WWV   SF=xxx, A=yy, K=zz,forecast

WX

This command is used to announce any weather (WX) conditions which you feel are pertinent to the users of your PacketCluster. You may view old WX reports using the SHOW/WX command.

By default, WX announcements are sent to only your local PacketCluster node. If, however, you want the announcement to be distributed throughout your cluster, you should use the /FULL qualifier.

Syntax   WX weather-announcement

                WX/Full weather-announcement

Example   WX/FULL Tornado spotted in Urbana!

General User Commands

Command	Description
Announce	Make general announcement
Announce/Full	Make general cluster-wide announcement
Bye	Leave the PacketCluster
CONFERence	Enter Conference Mode
CONFERence/Full	Enter cluster-wide Conference Mode
DElete	Delete mail message
DIrectory	Show active mail messages
DIrectory call	Show messages for that call
DIrectory/All	Show all active mail messages
DIrectory/Bulletins	Show bulletin mail messages
DIrectory/New	Show new mail messages
DIrectory/Own	Show mail to or from yourself
DIrectory/Subject text	Show mail with specified subject text
DIrectory/nn	Show nn active mail messages
Dx	Announce a DX spot
EXECUTE	Execute your personal command file
FINDFILE mask	Locate a file on the local PacketCluster node
Help or ?	Online help summary
Read	Read a mail message
Read/NOPAGE	Read a mail message without pausing
REPly	Reply to last mail message read
REPly/Delete	Reply and delete last mail message read
REPly/RR	Reply and request a return receipt
Send	Send a mail message
Send/Copy msg-#	Send a copy of a mail message
Send/NOPrivate	Send a public mail message
Send/Private	Send a private mail message
Send/RR	Send a mail message and request a return receipt
SEt/ALias call	Set alias call
SEt/ANNouncements	Allow announcements to be sent to you
SEt/ANSi	ANSI escape sequences accepted
SEt/Beep	Allow beeps to be sent to you
SEt/DX_announcements	Allow DX spots to be sent to you
SEt/Filter/mode/BAND=(band,band) px,px...	Filter out DX spots for specified prefixes
SEt/HEre	Specify you're available
SEt/HOme_node call	Enter your home node information
SEt/LOCation	Specify your latitude/longitude
SEt/LOGin_announcements	Allow login/logout announcements to be sent to you
SEt/Mail_announcements	Allow new mail announcements to be sent to you
SEt/NAme	Specify your name
SEt/NEed/mode/BAND=(band,band) px,px...	Specify country needs
SEt/NOALias	Clear the alias call
SEt/NOANNouncements	Don't allow announcements to be sent to you
SEt/NOANSi	ANSI sequences not accepted
SEt/NOBeep	Don't allow beeps to be sent to you
SEt/NODx_announcements	Don't allow DX spots to be sent to you

SEt/NOFilter/mode/BAND=(band,band) px,px...	Don't filter DX spots for specified prefixes
SEt/NOHere	Specify you're not available
SEt/NOLogin_announcements	Don't allow login/logout announcements to be sent to you
SEt/NOMail_announcements	Don't allow new mail alerts to be sent to you
SEt/NONeed	Delete country needs
SEt/NOPrivilege	Turn off privileges
SEt/NOTalk	Don't allow talk messages to be sent to you
SEt/NOWwv_announcements	Don't allow WWV announcements to be sent to you
SEt/PAge line-cnt	Set page size
SEt/Privilege	Turn on privileges
SEt/Qth	Specify your city and state
SEt/Talk	Allow talk messages to be sent to you
SEt/Wwv_announcements	Allow WWV announcements to be sent to you
SHow/ANnouncements	Display announcements
SHow/ARchive	Display files in archive area
SHow/BULLAddr	Display list of bulletin addresses
SHow/Bulletins	Display files in bulletins area
SHow/Cluster	Show cluster user counts and uptime
SHow/COMmand	Show system operator-defined commands
SHow/CONFiguration	Show PacketCluster configuration
SHow/Dx	Show DX information
SHow/Files	Display files in files area
SHow/Forward	Display mail forwarding database
SHow/Heading wpx	Calculate beam heading to wpx country
SHow/Inactivity	Display inactivity timer function status
SHow/LOCation call	Show lat/long for specified user
SHow/LOG	Show PacketCluster log
SHow/LOGOn_messages	Show the logon messages which have been defined
SHow/Muf wpx	Show MUF to wpx country
SHow/Need wpx or call	Show country or user needs
SHow/NOTice	Show system notice information
SHow/Prefixes wpx	Show all valid prefixes starting with specified text
SHow/STation call	Display information about a user
SHow/Sun wpx	Calculate sunrise/sunset info
SHow/Time	Show system time
SHow/Users	Show connected users
SHow/Version	Show PacketCluster software version
SHow/WWv	Show WWV propagation information
SHow/WX	Show WX reports
SWitch	Switch between your call and the alias call
Talk call	Enter Talk Mode to specified user
Talk call msg	One-line talk message to user
Talk/Timestamp call msg	One-line talk with timestamp to user
TYpe/filearea filename	Display a file
TYpe/filearea/NOPAGE filename	Display a file without pause
UPDate/database	Update a database
UPDate/database/Append	Update a database; append to previous entry
UPLoad/File	Upload a general file
UPLoad/Bulletin	Upload a bulletin file
UPLoad/Usercmd	Upload a personal command file
WWV info	Log WWV propagation information
WX info	Log WX report

DXCC Countries

The following DXCC country list shows what prefixes are recognized by PacketCluster at the time of printing and the associated country number for the prefix. Note: This country number is currently unused by PacketCluster.

A2	Botswana	1		EA	Spain	34
A3	Tonga	2		EB	Spain	34
A4	Oman	3		EC	Spain	34
A5	Bhutan	4		ED	Spain	34
A6	United-Arab-Emirates	5		EE	Spain	34
A7	Qatar	6		EF	Spain	34
A9	Bahrein	7		EG	Spain	34
AP	Pakistan	8		EH	Spain	34
BV	Taiwan	9		EA6	Balearic-Is	35
BT	China	10		EC6	Balearic-Is	35
BY	China	10		ED6	Balearic-Is	35
C2	Nauru	11		EA8	Canary-Is	36
C3	Andorra	12		EC8	Canary-Is	36
C5	Gambia	13		ED8	Canary-Is	36
C6	Bahamas	14		EA9	Ceuta	37
C9	Mozambique	15		EC9	Ceuta	37
CE	Chile	16		ED9	Ceuta	37
CE0A	Easter-Island	17		EI	Ireland	38
CE0X	San-Felix	18		EL	Liberia	39
CE0Z	Juan-Fernandez	19		EP	Iran	40
CM	Cuba	20		ES	Estonia	196
CO	Cuba	20		ET	Ethiopia	41
CN	Morocco	21		F	France	42
CP	Bolivia	22		FG	Guadeloupe	43
CQ	Bolivia	22		FH	Mayotte	44
CT	Portugal	23		FK	New-Caledonia	45
CT2	Azores-Is	24		FM	Martinique	46
CT3	Madeira-Is	25		FO	Tahiti	47
CU	Azores-Is	24		FO/C	Clipperton	48
CX	Uruguay	26		FP	St-Pierre-Miquelon	49
CW	Uruguay	26		FR	Reunion	50
CY9	St-Paul-Is	27		FR/G	Glorioso	51
CY0	Sable-Is	28		FR/J	Juan-De-Nova	52
D2	Angola	29		FR/T	Tromelin	53
D4	Cape-Verde	30		FS	St-Martin	54
D6	Comoros	31		FT8W	Crozet	55
DA	Germany	32		FT8X	Kerguelen-Is	56
DF	Germany	32		FT8Y	Antarctica	102
DJ	Germany	32		FT8Z	Amsterdam-St-Paul-Is	58
DK	Germany	32		FW	Wallis-Is	59
DL	Germany	32		FY	French-Guiana	60
DU	Phillippines	33		G	England	61

GD	Isle-of-Man	62		KH7	Kure-Is	113
GI	Northern-Ireland	63		KH8	Amer-Samoa	114
GJ	Jersey	64		KH9	Wake-Is	115
GM	Scotland	65		KH0	Mariana-Is	116
GU	Guernsey	66		KL7	Alaska	117
GW	Wales	67		KP1	Navassa-Is	118
H4	Solomon-Is	68		KP2	Virgin-Is	119
HA	Hungary	69		KP4	Puerto-Rico	120
HB	Switzerland	70		KP5	Desecheo-Is	121
HB0	Lichtenstein	71		KX	Marshall-Is	122
HC	Ecuador	72		LA	Norway	123
HC8	Galapagos	73		LB	Norway	123
HD	Ecuador	72		LG	Norway	123
HD8	Galapagos	73		LU	Argentina	124
HG	Hungary	69		LX	Luxembourg	125
HH	Haiti	74		LZ	Bulgaria	126
HI	Dominican-Rep	75		M1	San-Marino	164
HK	Colombia	76		OA	Peru	127
HK0/M	Malpelo-Is	77		OD	Lebanon	128
HK0/A	San-Andres-Is	78		OE	Austria	129
HL	Korea	79		OH	Finland	130
HP	Panama	80		OH0	Aland-Is	131
HR	Honduras	81		OJ0	Market-Reef	132
HS	Thailand	82		OK	Czechoslovakia	133
HV	Vatican-City	83		ON	Belgium	134
HZ	Saudi-Arabia	84		OX	Greenland	135
I	Italy	85		OY	Faeroe-Is	136
IS	Sardinia	86		OZ	Denmark	137
IT	Sicily	87		P2	Papua	138
J2	Djibouti	88		P4	Aruba	326
J2/A	Abu-Ail	89		PA	Netherlands	139
J3	Grenada	90		PI	Netherlands	139
J5	Guinea-Bissau	91		PJ2	Neth-Antilles	140
J6	St-Lucia	92		PJ7	St-Maarten	141
J7	Dominica	93		PP	Brazil	142
J8	St-Vincent	94		PT	Brazil	142
JA	Japan	95		PY	Brazil	142
JD	Minami-Torishima	96		PY0	Fernando-De-Noronha	144
JD/O	Ogasawara	97		PY0	St-Peter-Paul-Rocks	145
JT	Mongolia	98		PY0	Trindade	146
JW	Svalbard-Is	99		PZ	Surinam	147
JX	Jan-Mayen	100		S0	Western-Sahara	325
JY	Jordan	101		S2	Bangladesh	148
KC4	Antarctica	102		S7	Seychelles	149
KC6/E	East-Carolines	103		S9	Sao-Tome	150
KC6/W	West-Carolines	104		SK	Sweden	151
KG4	Guantanamo-Bay	105		SL	Sweden	151
KH1	Amer-Phoenix	106		SM	Sweden	151
KH2	Guam	107		SP	Poland	152
KH3	Johnston-Is	108		ST	Sudan	153
KH4	Midway-Is	109				
KH5	Palmyra-Is	110				
KH5K	Kingman-Reef	111				
KH6	Hawaii	112				

ST0	Southern-Sudan	154	VK9/X	Christmas-Is	200
SU	Egypt	155	VK9/Y	Cocos-Keeling	201
SV	Greece	156	VK9/Z	Mellish-Reef	202
SV5	Dodecanese	157	VK9/N	Norfolk-Is	203
SV9	Crete	158	VK9/W	Willis-Is	204
SV/A	Mount-Athos	159	VK0/H	Heard-Is	205
T2	Tuvalu	160	VK0/M	Macquarie-Is	206
T30	West-Kiribat	143	VP2E	Anguilla	207
T31	Central-Kiribati	161	VP2M	Montserrat	208
T32	East-Kiribati	162	VP2V	Tortola-BVI	209
T33	Banaba-Is	323	VP5	Turks-Caicos	210
T5	Somali	163	VP8/F	Falkland-Is	234
T7	San-Marino	164	VP8/G	So-Georgia	211
TA	Turkey	165	VP8/O	So-Orkney	212
TF	Iceland	166	VP8/SA	So-Sandwich	213
TG	Guatemala	167	VP8/SH	So-Shetland	214
TI	Costa-Rica	168	VP9	Bermuda	215
TI9	Cocos-Is	169	VQ9	Chagos	216
TJ	Cameroon	170	VR6	Pitcairn-Is	217
TK	Corsica	171	VS6	Hong-Kong	218
TL	Central-Africa-Rep	172	VU	India	219
TN	Congo	173	VU7/A	Andaman-Is	220
TR	Gabon	174	VU7/L	Laccadive-Is	221
TT	Chad	175	V2	Antigua	222
TU	Ivory-Coast	176	V3	Belize	223
TY	Benin	177	V4	St-Kitts	224
TZ	Mali	178	V85	Brunei	225
UA	Eur-Russia	179	W	United States of America	226
UA/FJL	Franz-Josef-Land	180	XE	Mexico	227
UA2	Kaliningrad	181	XF4	Revilla-Gigedo	228
UA9	Asia-Russia	182	XT	Bukina-Faso	229
UA0	Asia-Russia	182	XU	Kampuchea	230
UB	Ukraine	183	XV	Vietnam	231
UC	White-Russia	184	XW	Laos	232
UD	Azerbaijan	185	XX	Macao	233
UF	Georgia	186	XZ	Burma	235
UG	Armenia	187	Y2	Germany	32
UH	Turkoman	188	YA	Afghanistan	237
UI	Uzbek	189	YB	Indonesia	238
UJ	Tadzhik	190	YC	Indonesia	238
UL	Kazakh	191	YI	Iraq	239
UM	Kirghiz	192	YJ	New-Hebrides	240
UO	Moldavia	193	YK	Syria	241
UP	Lithuania	194	YN	Nicaragua	242
UQ	Latvia	195	YO	Romania	243
UR	Estonia	196	YS	El-Salvador	244
VE	Canada	197	YU	Yugoslavia	245
VK	Australia	198	YV	Venezuela	246
VK9/H	Lord-Howe-Is	199	YV0	Aves-Is	247

ZA	Albania	248
ZB	Gibraltar	249
ZC4	U.K.Sov-Base-Cyprus	250
ZD7	St-Helena	251
ZD8	Ascension-Is	252
ZD9	Tristan-Da-Cunha	253
Z2	Zimbabwe	254
ZF	Cayman-Is	255
ZK1/N	No-Cook-Is	256
ZK1/S	So-Cook-Is	257
ZK2	Niue-Is	258
ZK3	Tokelaus	259
ZL	New-Zealand	260
ZL7	Chatham-Is	261
ZL8	Kermadec-Is	262
ZL9	Auckland-Campbell-Is	263
ZP	Paraguay	264
ZS	So-Africa	265
ZS8	Marion-Is	266
ZS3	Namibia	267
ZY	Brazil	142
1A	S.M.O.M.	268
1S	Spratly-Is	269
3A	Monaco	270
3B6	Agalega	271
3B7	Agalega	272
3B8	Mauritius	273
3B9	Rodriguez-Is	274
3C	Equatorial-Guinea	275
3C0	Annobon	276
3D2	Fiji-Is	277
3D2/C	Conway Reef	320
3D2/R	Rotuma	324
3DA	Swaziland	278
3V	Tunisia	279
3X	Guinea	280
3Y/B	Bouvet-Is	281
3Y/P	Peter-Is	320
4J	Malyj-Vystoskij-Is	322
4S	Sri-Lanka	282
4U/I	I.T.U.-Geneva	283
4U/U	U.N.-N.Y.	284
4W	Yemen	285
4X	Israel	286
5A	Libya	287
5B	Cyprus	288
5H	Tanzania	289
5L	Liberia	39
5N	Nigeria	290
5R	Malagasy-Rep	291
5T	Mauritania	292
5U	Niger	293
5V	Togo	294
5W	Western-Samoa	295
5X	Uganda	296
5Z	Kenya	297
6W	Senegal	298
6Y	Jamaica	299
7O	Yemen-People's-Dem	300
7P	Lesotho	301
7Q	Malawi	302
7X	Algeria	303
8P	Barbados	304
8Q	Maldive-Is	305
8R	Guyana	306
9G	Ghana	307
9H	Malta	308
9J	Zambia	309
9K	Kuwait	310
9L	Sierra-Leone	311
9M2	West-Malaysia	312
9M6	East-Malaysia	313
9N	Nepal	314
9Q	Zaire	315
9U	Burundi	316
9V	Singapore	317
9X	Rwanda	318
9Y	Trinidad	319

INDEX

distant station. The switch will issue a connect to that station on your behalf, and using your callsign with the SSID changed. THENET/NETROM nodes change the SSID from N to 15-N, while KA-NODES change the SSID from N to N-1. This is done to prevent confusion in the event of unusual propagation where the station could hear both your home station as well as the switch, i.e. two stations with identical callsigns. Operationally, the result is that if you are connecting to PACKETCLUSTER through a switch, and you are using MYCALL-0, you will appear to PACKETCLUSTER as MYCALL-15. It really doesn't hurt anything, it is just inelegant and stamps you as a DXer of a Lesser God. In either case you will appear as MYCALL-0 to the PACKETCLUSTER Node, since PacketCluster strips away the SSID number for purposes of keeping the User List simple to use.

Here is an example of a connect to a PACKETCLUSTER Node using a NETROM switch. The PACKETCLUSTER Node is K4CEF, the Switch is K4CEF-1, Alias HSVDX.

cmd: C K4CEF-1   (You issue a connect to switch K4CEF-1)

*** CONNECTED to K4CEF-1   (Your TNC tells you that connect
                           was successful)

C K4CEF   (You instruct the switch to connect to K4CEF on your
          behalf - This is a CONVERSE MODE Packet)

HSVDX:K4CEF-1} Connected to K4CEF   (The K4CEF-1 switch
                                    informs you that the connect
                                    to K4CEF was successful)

Connecting through a KA-NODE is essentially an identical procedure, except that the KA-NODE includes a connect message with a prompt line, and indicates a successful connect with the message ### LINK MADE. Whatever the case, it is not possible to cover all possible network situations in this brief explanation, and you will in all likelyhood find it necessary to contact the PACKETCLUSTER SYSOP for detailed instructions appropiate to your particular situation.

                ADDITIONAL INFORMATION FOR PACKRATT-64 USERS

The AEA PACKRATT-64 has a number of negative features which have caused severe problems. We would rather that none be used on the Network, but if you must, READ and UNDERSTAND the following information and perhaps you will be able to stay off of the SYSOPs LIDLIST.

The PACKRATT-64 does not store set-up parameters in BB RAM. If you have a disk drive, the parameters can be stored on disk in PARAMETER FILE 0, and when you boot up PACKRATT by typing "SYS33333" it will look for that file on the drive. If you have no drive, or if that parameter file is not present, then PACKRATT boots up with the default parameters which are not suitable for operation with PACKETCLUSTER.

If you have a disk drive, you should set the parameters and then save the set-up to disk as parameter file 0. If you have no drive, then you must

set the parameters each time you boot up by going to the packet parameter
screen. Sorry, but that's the way it is. Simply typing MYCALL W4XXX will
not do the job. The default parameters are:

AX25L2V2 OFF
DWAIT 2 (Units are 40 milliseconds)
FRACK 3 (Units are 1 second)
RESPTIME 12 (Units are 100 milliseconds)
TXDELAY 4 (Units are 40 milliseconds)
MYCALL PK64

These should be changed to:

AX25L2V2 ON (THE MOST IMPORTANT)
DWAIT 4
FRACK 8
RESPTIME 16
TXDELAY - 8 should be sufficient, but maybe longer
MYCALL - As appropiate

When the qso capture buffer is open (20K Bytes) it simply wraps around
when it fills, FIFO. But - there is a screen hold function (Function key
F1) which stops the screen from scrolling. The problem is that the buffer
assigned to store incoming data while you have the screen hold on is only
1000 bytes long, or about 12 lines of 80-column text. When this buffer
fills, then PACKRATT will send Receive-not-Ready packets in response to
any incoming data and this will bomb PACKETCLUSTER. Hitting RUN/STOP and
then using the BROWSE function will also cause the PACKRATT to send
Receive-not-Ready packets and will also bomb PACKETCLUSTER.

June 25, 1989
N4KTY   A.K.A. Captain Packet

OPERATING COMMENTS

o   Connect, following local procedures
o   Stay connected!   Avoid short duration activity.Each connect-disconnect action sends your sign-on or sign-off to each node,increases backbone frequency traffic and slows down the CLUSTER.
o   Monitor the CLUSTER when first starting to get a better understanding of its operation.
o   Report any new and unusual DX activity. This is the primary purpose of the CLUSTER.
o   Check your mail once or twice per week and delete it after reading.
o   Use recommended CLUSTER syntax rather than common PBBS abbreviations. There may be different meanings.
o   Use the HELP command whenever necessary to better understand intended Command. Record it locally at your station for future reference to avoid repeats.
o   Don't leave your Radio & TNC on without the computer and its terminal communications software on as well.
o   Be Patient! Sometimes the CLUSTER can be slow.
o   The CLUSTER does not support connection to outside PBBS or NTS routing.
o   Word wrap is not supported. Send a <CR> at the end of each line of text.
o   Recommended TNC settings:

RESPtime	:	1500ms
TXDelay	:	300-400 ms
AX25L2V2	:	ON
FRACK	:	5
RETRY	:	10
BEACON	:	OFF or DISABLE

LOCAL CONNECT INSTRUCTIONS:

Frequency: @   BPS

        Route:

DX PACKET CLUSTER

The DX Packet Cluster is an on-line multi-state interactive network of Amateur Radio stations. It is exclusively dedicated to promoting and enhancing the ability of its participants to engage in timely contacts with DX stations around the world.

This Guide is designed to provide the user, a quick reference for some of the more common commands which allow access to the Cluster's unique attributes, along with notes on getting started, operation and syntax requirements.

The Cluster consists of 14 individual Nodes located in Alabama, Georgia, Tennessee, Kentucky, North Carolina and South Carolina. Each Node can support between 25 and 50 stations and is attached to other Nodes via a central backbone frequency.   Thus the Cluster can theoretically represent the ongoing DX interests of up to 700 stations, simultaneously connected.

Because of its size, care must be taken by the individual operator to ensure that no actions are initiated that would be detrimental to the overall operation of the Cluster and connected stations.

WHAT DO I NEED TO USE THE PACKETCLUSTER?

Any average packet station will do. Basically, you need a
Terminal Node Controller (TNC), a 2 meter transceiver (use of
handy-talkies is definitely discouraged), and a simple CRT
terminal and keyboard. The latter requirement may be met by a
small personal computer running under some kind of terminal
software package such as is used to interface the computer to
a telephone modem. Simple programs are available for all the
popular types of personal computers. Many users have only,
"dumb" ASCII terminal connected to their TNC--and this
suffices quite nicely.

The CRT display associated with the terminal or computer
should have preferably, 80 columns since the information
presented is formatted that way. In the case of a personal
computer, some types are more prone to emitting radio-
frequency interference than others and this should be
examined before making your purchase. We have had some cases
where the emissions of the computer or terminal are so
horrendous as to make simultaneous and operation between an
HF radio and the packet network impossible and this greatly
reduces the effectiveness of this tool as an online aid.

Several TNC's are available and all operate basically the
same way, but, as with any equipment, some are better that
others. The most popular units are built by AEA, Kantronics,
and MFJ. DRSI also builds a TNC for the IBM PC and clones,
which is completely internal to the computer. All are
compatible with each other. Use of the PK-64 which plugs
directly into the Commodore 64 is discouraged as it has
several small quirks which make life difficult for the user
and the network, however some of these are being used on our
network quite successfully. Please remember, that whatever
you do on a multi-user network affects people on the entire
network.
If your equipment causes constant retires because it is not
tuned properly, or does not have the timing parameters set
properly, it takes up unnecessary time on the channel by
asking for the repeat of data. This slows down the entire
system--not just the individual user. Notes on all the above
are contained in the following section.

Most antennas are OK to use--it is important that you put a
nice clean signal into the system and have your deviation
adjusted properly--and it is fairly important that you are
heard by as many users around you as is practical--this
nature of packet is such that it does its best to avoid
collisions with other packets--and that means it is necessary
that other DXers on the system hear you as well as making
sure the network node hears you--so DO put in a decent
antenna--beams are best--no rubber ducks!!

A user owes it to himself and to the other users of the
network to enter the system with a thoroughly debugged packet
system. The network is NO PLACE to learn packet. READ YOUR
MANUAL and experiment some on a simple frequency with a
friend. Learn to use the bulletin boards and digipeaters on
145.01. Only then should you tackle the network! It is a
sophisticated system , very user friendly, but delicate,
which can be brought to its knees by a poorly adjusted or
poorly operated packet station.

HOW DO I GET INTO THE PACKETCLUSTER?

Once you feel you are comfortable and somewhat competent with
the packet equipment, have tried out several packet QSO's,
have the basic of adjusting your timing parameters down, and
have read your manual, you're ready to tackle the network.
The frequencies are 145.75 and 147.585. I try and have the
users that access the node directly on 147.585. The
frequency is 145.75 is used primarly for users connecting
in via a netrom. Put your 2 meter radio on either frequency,
make sure your radio is in simplex mode. Put your TNC in
COMMAND mode (CMD:) and type CONNECT KB4HU <carriage return>.
If you are close enought to connect direct you'll get an
immediate response. If you cannot reach KB4HU directly,
the net/rom connect procedures are, from the (CMD:),
C NASDX4. You will get a connected to NASDX4/K4UVH-4. Once
you are connected to the net/rom you will enter C KB4HU.
NETROMS are located in Murfreesboro (NASDX) , Ridgetop
(NASDX4), and Bowling Green (BGNDX) on 145.75 and Franklin
FKLNDX on 147.585. When the PacketCluster responds, you will
be given a welcoming message from the Middle Tenn DX Packet
Network and told to type a ? of an H for additional help. If
you do this, the system will respond with a menu of commands
and a very brief description of each, that will allow you to
use the network. For starters, try a SHOW/CLUSTER. When you
type this in, the system, will respond with a totals table
that lists all of the folks, who are connected to the system
at the moment, with the number of nodes, local users and
system user connected at that time.After you try this, you
can then type in SHOW/DX. The system will respond with the 5
latest entries from the DX log--these contain the Call,
Frequency, Date and Time of the entry and the call letter of
the Dxer who entered it.

After this, you can just sit back awhile and peruse the list-
but stay connected. If things are normal, the others on the
system will be entering DX periodically, and this will flash
immediately onto your screen along with a 'BEEP' from your
terminal to alert you that there is new DX data coming in.
This data is being entered in real-time by the other users of
the system and you are able to enter it also when you feel a
little more comfortable.

Early on, you should do a SET/NAME and put you name into the
user file. Also do a SET/QTH followed by you city and state
and a SET/LOCATION on which you specify you latitude and
longitude--help is available on this so you can get the
format right--this data is used for the online Heading and
MUF calculations you'll find out about in the following
sections.

There are a whole repertoire of instructions--a list of them
and a description of each is contained in the excerpt from
the Pavillion Software PacketCluster manual which we've
included. If you are online and forget the details of one of
the commands, simple type HELP followed by a space and the
command you're having trouble with, and a help file will
appear on your screen. To save time use this manual.

Using the system is like anything else--it takes practice--
and we understand that. There are so many things available
here that it can do, that it takes time to learn them all--
and they will truly amaze you--yet they are all basically
very simple--and your DXer friends are already doing it--
people who, like yourself, had no acquaintence at all with
packet, or digital communication in general a few weeks ago
and who are, today, using the system with great ease.

Bear in mind that, though there a lot of things the system
will do, the MAIN FUNCTION is as an alert tool--and what
makes this valuable, is the fact that a lot of the folks
doing the alerting are DXers in other parts of the south that
are not available to us on the voice repeater--they are far
away, hearing different things that we can hear here at
different times and different propagation conditions. They
talk to different people every day than we do and propagate
different rumors! Typically, the Atlanta and Charlotte folks
hear things a bit earlier than we do--particularly on the low
bands--they have sunrise and sunset an hour earlier than we
do, so they are excellent help as to previewing what you'll
hear in a little while!

WHAT DATA IS AVAILABLE ON THE PACKETCLUSTER?

As we said a list and description of the commands follows in the book but some of them are summarized below.

SHOW/DX lists the latest 5 DX entries. You can modify this if you like and get more, say 12, by doing a SHOW/DX/12. You can make it band selective, if you like, by typing in SHOW/DX 15. Note the space there--that will give you 15 meter entries only. You can also use these command to search the DX database for information on times, dates and frequencies for stations you're seeking--such as SHOW/DX 40 VS6 which will list the last 5 40 meter VS6 entries! This is a terrific search tool. No longer will you have to ask on the repeater if anyone can remember the time or frequency a station last appeared--it is right here and available on your packet terminal! Help is as close as typing HELP SHOW/DX.

SHOW/SUN is for the lowbanders. This command is followed by a prefix--anything from the countries list. Example is SHOW/SUN ZL which shows you today's sunrise and sunset times in New Zealand!

SHOW/MUF followed by a prefix shows you the maximum and minimum usable frequencies to that country for the current clock time--a great on line tool for scheduling your contacts on another band.

SHOW/HEADING followed by a prefix gives you the great circle route heading based on your own latitude and longitude--online help for which way to point the beam. It also gives you the distance in statute miles for the path and indicated the CQ Zone Number (1 thru 40), in which the country resides.

SHOW/USERS gives you an immediate list of all the people currently connected to the system. Typically, when you do a SHOW/USERS you will see the calls of 90-125 other DXers who are currently logged onto the network. SHOW/USER, followed by a call, will search the user file and respond with that person's name and QTH of he has entered it. We keep this file online all the time.

SHOW/CONFIGURATION is a variation on SHOW/USERS--gives you the same data, by shows you which user is connected to which node--i.e. a list of all the users on the Huntsville (K4CEF) node, followed by all the users on the Charlotte (KD4IL) node, Atlanta (W8ZF), Newman (W1UA--west central Georgia), two additional Atlanta nodes (AB4AE and K4KG), Chattanooga (W4KAU), Knoxville (AG4M), Lexington (N4TY),and Nashville (KB4HU) nodes also Birmingham is online.

Enter DX into the system by typing DX callsign frequency.
You may also enter it as DX frequency callsign--the order
does not matter.

The information you enter will be distributed to all the
other users in the system and the system will automatically
append today's date, the time (UTC), and your call, and enter
it into the DX log file. There is also space for remarks as
necessary. An example would be:

                    DX VK9ZW 14020 Good signal--LP
                              or
                    DX 14020 VK9ZW Good signal-LP

The information will be distributed to the rest of the
network and appear on all the other user screens in the
system as follows:

DX de AA4DO:14020 VK9ZW Good signal--LP 22-Jan-1989 0242Z

SHOW/WWV will give you the 5 latest WWV propagation report
entries including the Solar Flux, A Index and K Index along
with the forecast. This data is also used in the SHOW/MUF
calculations.

There is also a SHOW/OBLAST command for those interested in
finding out what oblast a given Russian callsign is in. You
can do a SHOW/OBL followed by a return to get extra help on
this one.

You can use the TALK command (TALK callsign) to send a
message to anyone in the user list--regardless of which city
hs is in--the computers do the work of message routing etc.
There are two kinds of Talk command--the full Talk mode is
entered by doing a TALK followed by a callsign and a carriage
return. This puts you in the Talk mode until you type a
Control Z and terminate it--it is used when you intend to
carry on a brief conversation with someone that may encompass
several lines. Remember that anything you type from here on
out is sent to that person--so it takes special care, once
you're in Talk mode, to do a SHOW/USERS or a SHOW/DX. You
must preface this with a * or else the person you're Talking
to sees a SHOW/DX suddenly on his screen.

The second type of Talk mode is used for simple one line
messages and in by far the most often used. Talk callsign
followed by a one line message before the carriage return
will accomplish a lot. Again, you can do on e of these to
any user and send him brief message.

ANNOUNCE will make an announcement to everyone on the
network--on all nodes. This is good for notices of DX
interest such as:

ANNOUNCE FR5DX will be on 28510 at 1530Z tomorrow.
You may also announce selectively by node by typing
ANN/NODECALL (the callsign of the node where you wish to make
the announcement). And example:

            ANN/KB4HU DX net at 0900Z 145.29.

ANN/K4CEF Can someone get Bart on. New country for him.
ANN/FULL Will make a system wide announcement.

We have added a few commands on out own to the Cluster:

SHOW/QSL callsign -- An online QSL managers directory. This
will search the online file to see if we have the QSL manager
you're looking for/ If we have a direct address or a manager
listing, we will send you this information in the next
packet. this is not intended to be as complete as a W6GO
Directory would be, but we do provide current information on
a great many of the more popular Dx stations and expeditions.

SHOW/ROSTER callsign-- an online name, address and telephone
member listing for each user of the Nashville node.

SHOW/NEWS This information is loaded weekly from the most
recent QRZ DX bulletin highlights.

SHOW/NEED This will display all the users who would like to
be notified that a specific station is on.

The DX PakcketCluster contains an excellent online mail and
BBS service. It can be used to send mail to users which are
anywhere in the network. Forwarding of mail and bulletins is
automatic between nodes, and it is not necessary to know the
location of the station you're sending mail to.
The following commands are used to operate the bulletin board
from within the Cluster:

SEND callsign -- initiates a mail message to the station
specified. The Cluster will prompt you for a subject, and for
your text. Terminate the message with a Ctrl Z or /EXIT on a
separate line.

READ -- When your told that you have mail waiting when you
sign on, you can type READ and get the oldest message that is
directed to you. When you finish, you can type REPLY,
REPLY/DELETE, or READ again. If you type READ again, you'll
get the next oldest message for you. READ followed by a
message number, will transmit the contents of that message to
you.

REPLY -- allows you to reply immediately to a message you have just read. The Cluster prepares the heading and the subject line. REPLY/DELETE will prepare your reply, and delete the message you're replying to when you're finished sending.

DELETE -- This deletes the message you just read, or, when followed by a message number, deletes that message if you are the sender or the recipient.

DIRECTORY -- Sends you a directory of the last 5 messages on the BBS. DIRECTORY/ALL will send you the entire directory. DIRECTORY/NEW gets you the new entries, in the directory since the last time you issued a DIRECTORY command, and DIRECTORY/OWN will display on the titles of messages addressed to you, or sent by you.

SHOW/FILES -- shows you the contents of the FILE area. You may read any file with the TYPE command.

SHOW/BULLETIN -- shows you the contents of the bulletin area. We keep current DX and propagation bulletins here for downloading.

READ/FILES filename -- will send you the file you require. READ/BULLETIN filename -- send you the selected bulletin.

REMEMBER -- Help on any of the above commands is always online and contains much more information than is given here. The enclosed excerpt from the Cluster manual also is a handy reference for information.

PLEASE REMEMBER that you are sharing this network and its resources with your other DXer friends--be considerate of them--do not hog the airtime with needless ragchewing--keep it brief and DX related, keep your equipment operating properly and adjusted correctly.

By the way when you wish to remain connected, but not in the shack enter a SET/NOHERE and a set of parentheses is placed around your call in the user list signifying your un-availability at the moment. When you return, in a SET/HERE and they are removed.

Any assistance you need, just to a Talk KB4HU and 1 will do my best to be of assistance if I'm online.

(Soya Wanna Get on Packet)

For Aspiring DX PACKETCLUSTER Participants

The present Southeast PACKETCLUSTER Network consists of seven Nodes and a number of digital repeater switches. The Nodes, running a software package hosted on an IBM PC, are located in Nashville, TN (KB4HU), Huntsville, AL (K4CEF), North Atlanta (W8ZF), South Atlanta (W1UA), Chattanooga (W4KAU), Knoxville (AG4M) and Charlotte, NC (KD4IL). The nodes are all interconnected in real-time, and a user on any node has access to DX information called in by ALL the users on the network. The mode of communication inter-Node and between users and Nodes is Amateur Packet Radio. This is a digital communications medium whose primary distinguishing characteristics are: 1. Data transmissions from a station are sent in short bursts, or PACKETS and 2. Two stations are CONNECTED to each other under a set of rules called AX.25 Protocol which allows error checking and re-transmission if necessary. The transmission medium of choice is 1200 baud AFSK or 2400 baud PSK using ordinary 2-meter radios.

At present, each node operates on a different, local frequency, which is coordinated within that node's respective state. Locally, we operate on TWO frequencies -- 144.93, and 145.75 mhz. Each PACKETCLUSTER Node can support up to 50 users. A user COMMANDS his packet station to establish a connection to the Node, and thereafter commands are sent to the PACKETCLUSTER Node as CONVERSational text by typing on a keyboard. The commands are interpreted by the Node and the appropiate response is sent back to the user and appears on the terminal screen.

The necessary equipment for operating as a PACKETCLUSTER user is a terminal or computer with a simple terminal program, a 2-meter transceiver capable of operating on the local PACKETCLUSTER frequency, and a Terminal Node Controller, or TNC. The TNC interfaces to the terminal or computer via a digital interface and ASCII data flows between the two. The TNC interfaces to the 2-meter rig via three lines. Audio is fed from the TNC to the radio microphone input, audio is fed from the radio speaker output to the TNC audio input, and a PTT line from the TNC to the radio keys the transceiver.

There is absolutely no need to use a computer as a terminal unless you happen to have one around that you don't mind dedicating to PACKETCLUSTER. But running a Turbo PC/AT with PROCOMM or XTALK is a bit of overkill. PACKETCLUSTER maintains all the necessary information in its own files, and so there is no real need for a "smart terminal" emulator with upload and download capability. A "dumb terminal" is all that is required.

The primary consideration is that your TNC should support AX.25 Level 2 Version 2 Protocol. If it does not, you will not be able to interface with PACKETCLUSTER. All TAPR-2 TNCs and clones (MFJ-1270, AEA PK-80, PACCOMM 200s) running version 1.1.2 or higher, all Kantronics running version 2.0 or higher support this protocol. BUT -- There is a command called AX25L2V2 which MUST BE ON. The TNC may come from the factory with this command defaulted to OFF. It MUST be ON!

A second consideration is what kind of computer or terminal you are using. All TNCs support an RS-232 terminal interface. However, the venerable Commodore-64 does not have a true RS-232 compatible interface, but rather a C-64 terminal program programs the user port (the edge connector on the left rear as you are looking from the front) to support ASCII communications with TTL levels (0 and 5 volts). All Kantronics TNCs, the MFJ-1270 and 1274, and the PACCOMM 220 (Not the 200) make provisions for a TTL interface. So if you plan to use a C-64 with a terminal program you should consider one of the TNCs that supports TTL interface. Alternately, you can get a TTL-to-RS-232 converter for the C-64 but they tend to be rather expensive, on the order of $40.00.

The next consideration is a good antenna system. You will not be successful using a rubber duck on a H-T or a mag-mount on top of the desk. Packet is VERY suceptible to multipath distortion, and a good outside antenna is a must. Assuming you already have a 2-M antenna on the tower for a voice repeater, add a second one dedicated to packet, the higher the better. If vertical space is a problem, the 4-element Cushcraft 147-4 makes a good antenna. If you have a reasonable chance to communicate with the PACKETCLUSTER Node directly rather than through a digipeater or node switch (see below), then make every effort to do so. It makes the network more efficient. It is also important that you can hear as many of the other users as possible to reduce the chance of collisions (two packets being transmitted at the same time) and this as well argues for a good antenna system.

Now, this will not be a dissertation on how to operate packet. But, READ YOUR MANUAL and especially learn the difference between COMMAND and CONVERSE mode. In COMMAND mode you are talking to the TNC and anything you type is interpreted as a command by the TNC. In CONVERSE mode you are talking to the world and anything you type is interpreted as text and is sent out over the air as a packet when you hit a carriage return (C/R). You get into COMMAND mode by typing CRTL-C (C/R), and you know you are in COMMAND mode because the TNC sends the prompt cmd:. If you are in COMMAND mode you get into CONVERSE mode by typing the command CONVERSE (or CONV for short). If you are in CONVERSE mode and you wish to return to COMMAND mode, this is done by typing CONTROL-C (Holding the CTRL key down while simultaneously typing a "C") The PACKRATT-64 and some special terminal programs for the C-64 use one of the function keys F1-F8 to move back and forth between COMMAND mode and CONVERSE mode. But remember, if you want to tell the TNC to do something you must be in COMMAND mode, and if you want to tell PACKETCLUSTER to do something, you must be in CONVERSE mode.

One of the big problems we have found is that many users feed a signal from their TNC to their radios that is too high in level. The result is overdeviation, distortion, and in general it doesn't work. Most 2-M radios have limiter diodes somewhere in the audio path and if your input audio level is too high you will be slamming up against the limiter diodes and feeding square waves to the modulator. On the air it sounds like a demented buzz-saw. Most modern 2-M rigs that use an electret microphone require an audio level somewhere in the range of 10 to 20 millivolts peak-to-peak. The best way to set it up is to set the deviation to 3.5 - 4.0 khz with a deviation meter.

But you don't really need a deviation meter. TNCs have a "CALIBRATE" or similar command which allows you to key the rig and send a packet tone. Listen to your transmitted signal with another rig, and turn up the level until the perceived volume stops increasing. At this point, you are up against the limiter diodes. Now back off the input level (level of audio from the TNC to the 2-M radio) until you hear the perceived volume decrease. Turn it down a bit more, and you will be close enough for all practical purposes. The audio should sound clean with no distortion or harshness. TAPR-2 clones have an adjustment pot on the board, and PACKRATTS have an adjustment accessible through a hole in the side of the unit. Kantronics TNCs have two fixed output levels selectable with a jumper, and if one of these does not work you may have to open up the 2-M rig and find the mic gain control. If this is necessary, be sure you adjust the mic gain control and not the deviation control. The mic gain control is before the limiters and the deviation control is after the limiters.

There are several timing parameters which you need to set properly. In the discussion to follow, the times will be given in milliseconds, but the units of various timing parameters vary according to the TNC. Check your manual for the proper conversion.

TXDELAY is the delay interval between key-up and start of data transmission. Normally 300-400 milliseconds is adequate, but some 2-M rigs take a bit longer to get up to speed after the keying line is asserted. If you seem to be having a problem being heard and all else seems OK, try increasing TXDELAY to 400-600 milliseconds.

PACKETCLUSTER sends a group of packets to users in a single transmission. The node switch or digipeater immediately repeats those that it has been asked to, but after the carrier drops there can be a problem if everyone tries to ACK at once. Therefore the parameters RESP (Response Time) and DWAIT are assigned to individual users to allow staggering of ACKS. RESP is the time delay between reception of a packet and transmission of an ACK, and DWAIT set the delay between when activity is last heard on the channel and key-up. You will be requested to set values of RESP and DWAIT in milliseconds, and don't forget to convert to get the proper value to command into your TNC. For example, if you have been asked to set DWAIT to 600 milliseconds and the units of DWAIT for your TNC are 10 milliseconds, then you would command DWAIT = 60.

Kantronics Firmware Version 2.82 and later has the commands PERSIST and SLOTTIME, which help enormously in avoiding collisions. PERSIST sets the probability that a packet will be transmitted at a given time, and SLOTTIME governs the interval between transmission trials. Initially PERSIST should be set to 64 and SLOTTIME to a value of 10, which is equivalent to 100 milliseconds.

FRACK should be set to 5 and RETRY to 10. FRACK sets the number of seconds between retries and RETRY sets the number of times your TNC will retry a packet before it gives up. Remember to set AX25L2V2 ON, or you will bomb the system. NEVER, NEVER, NEVER send an XOFF (CTRL-S) to your TNC without clearing it with an XON (CTRL-Q) ASAP. You may use an XOFF, for example, to stop information scrolling on your screen, but don't leave it that way for long. The problem is that your TNC buffer can fill up and if PACKETCLUSTER tries to send additional information your TNC

will send a RNR (Receive not Ready) packet and cause PACKETCLUSTER to die a horrible death. As well, this sort of thing could happen if you are loading text into a capture buffer of a terminal program and the capture buffer fills, causing the terminal program to send an XOFF to the TNC.

If all of this sounds preachy, you must remember that when you check into PACKETCLUSTER you become part of a six-state network involving seven nodes and many users. If your setup is marginal requiring a lot of retries (retransmission of packets) or if you do something to bomb the system then you are affecting a real-time network. Not quite the same as a keyboard-to-keyboard QSO or logging into a packet bulletin board system where only yourself and one other entity are affected. The PACKETCLUSTER Network IS NOT the place to check out your packet system or to learn how to use it. You can always arrange to go off on another frequency with another packet operator for your on-the-job training. You do not have to be a computer expert to successfully operate packet r dio, but it does require more committment than just picking up a 2-M H nd-Held and blathering drivel over the local voice repeater.

SUMMARY OF TNC SETTINGS

AX25L2V2 ON
DWAIT 500 Milliseconds
RESP 1500 Milliseconds
TXDELAY 300-400 milliseconds should be sufficient
FRACK 5
RETRY 10
PERSIST 64 (If applicable)
SLOTTIME 10 (If Applicable)

The local PACKETCLUSTER SYSOP may request you to change one or more of these parameters. You will, of course, be familiar with these commands and will cheerfully comply with the SYSOPs request.

****

CONNECTING TO PACKETCLUSTER THROUGH RELAY STATIONS

If unable to connect directly to a PACKETCLUSTER Node, it will be necessary to use some form of relay station or node switch. There are three possibilities; DIGIPEATERS, NETROM/THENET NODES, and KANTRONICS KA-NODES.

A DIGIPEATER is, as its name implies, a digital repeater that simply repeats packets. The snytax for establishing a connection through a Digipeater is CONNECT K4CEF VIA N4KTY-1, where N4KTY-1 is the callsign of the digipeater. Most times digipeaters will have an SSID other than 0 (no SSID) to distinguish it from a home station with the same callsign. (For more information on digipeaters, see your TNC manual).

NETROM/THENET Nodes and KA-NODES are advanced "Level 3" switches that greatly facilitate movement of packet traffic. To use these devices, you first connect to the switch, and then instruct the switch to connect to a

distant station. The switch will issue a connect to that station on your behalf, and using your callsign with the SSID changed. THENET/NETROM nodes change the SSID from N to 15-N, while KA-NODES change the SSID from N to N-1. This is done to prevent confusion in the event of unusual propogation where the station could hear both your home station as well as the switch, i.e. two stations with identical callsigns. Operationally, the result is that if you are connecting to PACKETCLUSTER through a switch, and you are using MYCALL-0, you will appear to PACKETCLUSTER as MYCALL-15. It really doesn't hurt anything, it is just inelegant and stamps you as a DXer of a Lesser God. In either case you will appear as MYCALL-0 to the PACKETCLUSTER Node, since PacketCluster strips away the SSID number for purposes of keeping the User List simple to use.

Here is an example of a connect to a PACKETCLUSTER Node using a NETROM switch. The PACKETCLUSTER Node is K4CEF, the Switch is K4CEF-1, Alias HSVDX.

cmd: C K4CEF-1 (You issue a connect to switch K4CEF-1)

*** CONNECTED to K4CEF-1 (Your TNC tells you that connect
                           was successful)

C K4CEF (You instruct the switch to connect to K4CEF on your
          behalf - This is a CONVERSE MODE Packet)

HSVDX:K4CEF-1} Connected to K4CEF (The K4CEF-1 switch
                                    informs you that the connect
                                    to K4CEF was successful)

Connecting through a KA-NODE is essentially an identical procedure, except that the KA-NODE includes a connect message with a prompt line, and indicates a successful connect with the message ### LINK MADE. Whatever the case, it is not possible to cover all possible network situations in this brief explanation, and you will in all likelyhood find it necessary to contact the PACKETCLUSTER SYSOP for detailed instructions appropiate to your particular situation.

ADDITIONAL INFORMATION FOR PACKRATT-64 USERS

The AEA PACKRATT-64 has a number of negative features which have caused severe problems. We would rather that none be used on the Network, but if you must, READ and UNDERSTAND the following information and perhaps you will be able to stay off of the SYSOPs LIDLIST.

The PACKRATT-64 does not store set-up parameters in BB RAM. If you have a disk drive, the parameters can be stored on disk in PARAMETER FILE 0, and when you boot up PACKRATT by typing "SYS33333" it will look for that file on the drive. If you have no drive, or if that parameter file is not present, then PACKRATT boots up with the default parameters which are not suitable for operation with PACKETCLUSTER.

If you have a disk drive, you should set the parameters and then save the set-up to disk as parameter file 0. If you have no drive, then you must

set the parameters each time you boot up by going to the packet parameter screen. Sorry, but that's the way it is. Simply typing MYCALL W4XXX will not do the job. The default parameters are:

AX25L2V2 OFF
DWAIT 2 (Units are 40 milliseconds)
FRACK 3 (Units are 1 second)
RESPTIME 12 (Units are 100 milliseconds)
TXDELAY 4 (Units are 40 milliseconds)
MYCALL PK64

These should be changed to:

AX25L2V2 ON (THE MOST IMPORTANT)
DWAIT 4
FRACK 8
RESPTIME 16
TXDELAY - 8 should be sufficient, but maybe longer
MYCALL - As appropiate

When the qso capture buffer is open (20K Bytes) it simply wraps around when it fills, FIFO. But - there is a screen hold function (Function key F1) which stops the screen from scrolling. The problem is that the buffer assigned to store incoming data while you have the screen hold on is only 1000 bytes long, or about 12 lines of 80-column text. When this buffer fills, then PACKRATT will send Receive-not-Ready packets in response to any incoming data and this will bomb PACKETCLUSTER. Hitting RUN/STOP and then using the BROWSE function will also cause the PACKRATT to send Receive-not-Ready packets and will also bomb PACKETCLUSTER.

June 25, 1989
N4KTY   A.K.A. Captain Packet

WA4VWR

OPERATING COMMENTS

o Connect, following local procedures
o Stay connected! Avoid short duration activity.Each connect-disconnect action sends your sign-on or sign-off to each node,increases backbone frequency traffic and slows down the CLUSTER.
o Monitor the CLUSTER when first starting to get a better understanding of its operation.
o Report any new and unusual DX activity. This is the primary purpose of the CLUSTER.
o Check your mail once or twice per week and delete it after reading.
o Use recommended CLUSTER syntax rather than common PBBS abbreviations. There may be different meanings.
o Use the HELP command whenever necessary to better understand intended Command. Record it locally at your station for future reference to avoid repeats.
o Don't leave your Radio & TNC on without the computer and its terminal communications software on as well.
o Be Patient! Sometimes the CLUSTER can be slow.
o The CLUSTER does not support connection to outside PBBS or NTS routing.
o Word wrap is not supported. Send a <CR> at the end of each line of text.
o Recommended TNC settings:

RESPtime	:	1500ms
TXDelay	:	300-400 ms
AX25L2V2	:	ON
FRACK	:	5
RETRY	:	10
BEACON	:	OFF or DISABLE

LOCAL CONNECT INSTRUCTIONS:
Frequency: @   BPS
    Route:

DX PACKET CLUSTER

The DX Packet Cluster is an on-line multi-state interactive network of Amateur Radio stations. It is exclusively dedicated to promoting and enhancing the ability of its participants to engage in timely contacts with DX stations around the world.

This Guide is designed to provide the user, a quick reference for some of the more common commands which allow access to the Cluster's unique attributes, along with notes on getting started, operation and syntax requirements.

The Cluster consists of 14 individual Nodes located in Alabama, Georgia, Tennessee, Kentucky, North Carolina and South Carolina. Each Node can support between 25 and 50 stations and is attached to other Nodes via a central backbone frequency. Thus the Cluster can theoretically represent the ongoing DX interests of up to 700 stations, simultaneously connected.

Because of its size, care must be taken by the individual operator to ensure that no actions are initiated that would be detrimental to the overall operation of the Cluster and connected stations.

WHAT DO I NEED TO USE THE PACKETCLUSTER?

Any average packet station will do. Basically, you need a
Terminal Node Controller (TNC), a 2 meter transceiver (use of
handy-talkies is definitely discouraged), and a simple CRT
terminal and keyboard. The latter requirement may be met by a
small personal computer running under some kind of terminal
software package such as is used to interface the computer to
a telephone modem. Simple programs are available for all the
popular types of personal computers. Many users have only,
"dumb" ASCII terminal connected to their TNC--and this
suffices quite nicely.

The CRT display associated with the terminal or computer
should have preferably, 80 columns since the information
presented is formatted that way. In the case of a personal
computer, some types are more prone to emitting radio-
frequency interference than others and this should be
examined before making your purchase. We have had some cases
where the emissions of the computer or terminal are so
horrendous as to make simultaneous and operation between an
HF radio and the packet network impossible and this greatly
reduces the effectiveness of this tool as an online aid.

Several TNC's are available and all operate basically the
same way, but, as with any equipment, some are better that
others. The most popular units are built by AEA, Kantronics,
and MFJ. DRSI also builds a TNC for the IBM PC and clones,
which is completely internal to the computer. All are
compatible with each other. Use of the PK-64 which plugs
directly into the Commodore 64 is discouraged as it has
several small quirks which make life difficult for the user
and the network, however some of these are being used on our
network quite successfully. Please remember, that whatever
you do on a multi-user network affects people on the entire
network.
If your equipment causes constant retires because it is not
tuned properly, or does not have the timing parameters set
properly, it takes up unnecessary time on the channel by
asking for the repeat of data. This slows down the entire
system--not just the individual user. Notes on all the above
are contained in the following section.

Most antennas are OK to use--it is important that you put a
nice clean signal into the system and have your deviation
adjusted properly--and it is fairly important that you are
heard by as many users around you as is practical--this
nature of packet is such that it does its best to avoid
collisions with other packets--and that means it is necessary
that other DXers on the system hear you as well as making
sure the network node hears you--so DO put in a decent
antenna--beams are best--no rubber ducks!!

A user owes it to himself and to the other users of the
network to enter the system with a thoroughly debugged packet
system.   The network is NO PLACE to learn packet. READ YOUR
MANUAL and experiment some on a simple frequency with a
friend. Learn to use the bulletin boards and digipeaters on
145.01. Only then should you tackle the network! It is a
sophisticated system , very user friendly, but delicate,
which can be brought to its knees by a poorly adjusted or
poorly operated packet station.

HOW DO I GET INTO THE PACKETCLUSTER?

Once you feel you are comfortable and somewhat competent with
the packet equipment, have tried out several packet QSO's,
have the basic of adjusting your timing parameters down, and
have read your manual, you're ready to tackle the network.
The frequencies are 145.75 and 147.585. I try and have the
users that access the node directly on 147.585. The
frequency is 145.75 is used primarly for users connecting
in via a netrom. Put your 2 meter radio on either frequency,
make sure your radio is in simplex mode. Put your TNC in
COMMAND mode (CMD:) and type CONNECT KB4HU <carriage return>.
If you are close enought to connect direct you'll get an
immediate response. If you cannot reach KB4HU directly,
the net/rom connect procedures are, from the (CMD:),
C NASDX4. You will get a connected to NASDX4/K4UVH-4. Once
you are connected to the net/rom you will enter C KB4HU.   *144.93*
NETROMS are located in Murfreesboro (NASDX), Ridgetop
(NASDX4), and Bowling Green (BGNDX) on 145.75 and Franklin
FKLNDX on 147.585. When the PacketCluster responds, you will
be given a welcoming message from the Middle Tenn DX Packet
Network and told to type a ? of an H for additional help. If
you do this, the system will respond with a menu of commands
and a very brief description of each, that will allow you to
use the network. For starters, try a SHOW/CLUSTER. When you
type this in, the system, will respond with a totals table
that lists all of the folks, who are connected to the system
at the moment, with the number of nodes, local users and
system user connected at that time.After you try this, you
can then type in SHOW/DX. The system will respond with the 5
latest entries from the DX log--these contain the Call,
Frequency, Date and Time of the entry and the call letter of
the Dxer who entered it.

After this, you can just sit back awhile and peruse the list-
but stay connected. If things are normal, the others on the
system will be entering DX periodically, and this will flash
immediately onto your screen along with a 'BEEP' from your
terminal to alert you that there is new DX data coming in.
This data is being entered in real-time by the other users of
the system and you are able to enter it also when you feel a
little more comfortable.

only required once!!

Early on, you should do a SET/NAME and put you name into the
user file. Also do a SET/QTH followed by you city and state
and a SET/LOCATION on which you specify you latitude and
longitude--help is available on this so you can get the
format right--this data is used for the online Heading and
MUF calculations you'll find out about in the following
sections.

There are a whole repertoire of instructions--a list of them and a description of each is contained in the excerpt from the Pavillion Software PacketCluster manual which we've included. If you are online and forget the details of one of the commands, simple type HELP followed by a space and the command you're having trouble with, and a help file will appear on your screen. To save time use this manual.

Using the system is like anything else--it takes practice-- and we understand that. There are so many things available here that it can do, that it takes time to learn them all-- and they will truly amaze you--yet they are all basically very simple--and your DXer friends are already doing it-- people who, like yourself, had no acquaintence at all with packet, or digital communication in general a few weeks ago and who are, today, using the system with great ease.

Bear in mind that, though there a lot of things the system will do, the MAIN FUNCTION is as an alert tool--and what makes this valuable, is the fact that a lot of the folks doing the alerting are DXers in other parts of the south that are not available to us on the voice repeater--they are far away, hearing different things that we can hear here at different times and different propagation conditions. They talk to different people every day than we do and propagate different rumors! Typically, the Atlanta and Charlotte folks hear things a bit earlier than we do--particularly on the low bands--they have sunrise and sunset an hour earlier than we do, so they are excellent help as to previewing what you'll hear in a little while!

WHAT DATA IS AVAILABLE ON THE PACKETCLUSTER?

As we said a list and description of the commands follows in the book but some of them are summarized below.

SHOW/DX lists the latest 5 DX entries. You can modify this if you like and get more, say 12, by doing a SHOW/DX/12. You can make it band selective. if you like. by typing in SHOW/DX 15. Note the space there--that will give you 15 meter entries only. You can also use these command to search the DX database for information on times. dates and frequencies for stations you're seeking--such as SHOW/DX 40 VS6 which will list the last 5 40 meter VS6 entries! This is a terrific search tool. No longer will you have to ask on the repeater if anyone can remember the time or frequency a station last appeared--it is right here and available on your packet terminal! Help is as close as typing HELP SHOW/DX.

SHOW/SUN is for the lowbanders. This command is followed by a prefix--anything from the countries list. Example is SHOW/SUN ZL which shows you today's sunrise and sunset times in New Zealand!

SHOW/MUF followed by a prefix shows you the maximum and minimum usable frequencies to that country for the current clock time--a great on line tool for scheduling your contacts on another band.

SHOW/HEADING followed by a prefix gives you the great circle route heading based on your own latitude and longitude-- online help for which way to point the beam. It also gives you the distance in statute miles for the path and indicated the CQ Zone Number (1 thru 40), in which the country resides.

SHOW/USERS gives you an immediate list of all the people currently connected to the system. Typically, when you do a SHOW/USERS you will see the calls of 90-125 other DXers who are currently logged onto the network. SHOW/USER, followed by a call, will search the user file and respond with that person's name and QTH of he has entered it. We keep this file online all the time.

SHOW/CONFIGURATION is a variation on SHOW/USERS--gives you the same data, by shows you which user is connected to which node--i.e. a list of all the users on the Huntsville (K4CEF) node, followed by all the users on the Charlotte (KD4IL) node, Atlanta (W8ZF), Newman (W1UA--west central Georgia), two additional Atlanta nodes (AB4AE and K4KG), Chattanooga (W4KAU), Knoxville (AG4M), Lexington (N4TY),and Nashville (KB4HU) nodes also Birmingham is online.

Enter DX into the system by typing DX callsign frequency.
You may also enter it as DX frequency callsign--the order
does not matter.

The information you enter will be distributed to all the
other users in the system and the system will automatically
append today's date, the time (UTC), and your call, and enter
it into the DX log file. There is also space for remarks as
necessary. An example would be:

                DX VK9ZW 14020 Good signal--LP
                           or
                DX 14020 VK9ZW Good signal-LP

The information will be distributed to the rest of the
network and appear on all the other user screens in the
system as follows:

DX de AA4DO:14020 VK9ZW Good signal--LP 22-Jan-1989 0242Z

SHOW/WWV will give you the 5 latest WWV propagation report
entries including the Solar Flux, A Index and K Index along
with the forecast. This data is also used in the SHOW/MUF
calculations.

There is also a SHOW/OBLAST command for those interested in
finding out what oblast a given Russian callsign is in. You
can do a SHOW/OBL followed by a return to get extra help on
this one.

You can use the TALK command (TALK callsign) to send a
message to anyone in the user list--regardless of which city
hs is in--the computers do the work of message routing etc.
There are two kinds of Talk command--the full Talk mode is
entered by doing a TALK followed by a callsign and a carriage
return. This puts you in the Talk mode until you type a
Control Z and terminate it--it is used when you intend to
carry on a brief conversation with someone that may encompass
several lines. Remember that anything you type from here on
out is sent to that person--so it takes special care, once
you're in Talk mode, to do a SHOW/USERS or a SHOW/DX. You
must preface this with a * or else the person you're Talking
to sees a SHOW/DX suddenly on his screen.

The second type of Talk mode is used for simple one line
messages and in by far the most often used. Talk callsign
followed by a one line message before the carriage return
will accomplish a lot. Again, you can do on e of these to
any user and send him brief message.

ANNOUNCE will make an announcement to everyone on the
network--on all nodes. This is good for notices of DX
interest such as:

ANNOUNCE FR5DX will be on 28510 at 1530Z tomorrow.
You may also announce selectively by node by typing
ANN/NODECALL (the callsign of the node where you wish to make
the announcement). And example:

        ANN/KB4HU DX net at 0900Z 145.29.

ANN/K4CEF Can someone get Bart on. New country for him.
ANN/FULL Will make a system wide announcement.

We have added a few commands on out own to the Cluster:

SHOW/QSL callsign -- An online QSL managers directory. This
will search the online file to see if we have the QSL manager
you're looking for/ If we have a direct address or a manager
listing, we will send you this information in the next
packet. this is not intended to be as complete as a W6GO
Directory would be, but we do provide current information on
a great many of the more popular Dx stations and expeditions.

SHOW/ROSTER callsign-- an online name, address and telephone
member listing for each user of the Nashville node.

SHOW/NEWS This information is loaded weekly from the most
recent QRZ DX bulletin highlights.

SHOW/NEED This will display all the users who would like to
be notified that a specific station is on.

The DX PakcketCluster contains an excellent online mail and
BBS service. It can be used to send mail to users which are
anywhere in the network. Forwarding of mail and bulletins is
automatic between nodes, and it is not necessary to know the
location of the station you're sending mail to.
The following commands are used to operate the bulletin board
from within the Cluster:

SEND callsign -- initiates a mail message to the station
specified. The Cluster will prompt you for a subject, and for
your text. Terminate the message with a Ctrl Z or /EXIT on a
separate line.

READ -- When your told that you have mail waiting when you
sign on, you can type READ and get the oldest message that is
directed to you. When you finish, you can type REPLY,
REPLY/DELETE, or READ again. If you type READ again, you'll
get the next oldest message for you. READ followed by a
message number, will transmit the contents of that message to
you.

REPLY -- allows you to reply immediately to a message you
have just read. The Cluster prepares the heading and the
subject line. REPLY/DELETE will prepare your reply, and
delete the message you're replying to when you're finished
sending.

DELETE -- This deletes the message you just read, or, when
followed by a message number, deletes that message if you are
the sender or the recipient.

DIRECTORY -- Sends you a directory of the last 5 messages on
the BBS. DIRECTORY/ALL will send you the entire directory.
DIRECTORY/NEW gets you the new entries, in the directory
since the last time you issued a DIRECTORY command, and
DIRECTORY/OWN will display on the titles of messages
addressed to you, or sent by you.

SHOW/FILES -- shows you the contents of the FILE area. You
may read any file with the TYPE command.

SHOW/BULLETIN -- shows you the contents of the bulletin area.
We keep current DX and propagation bulletins here for
downloading.

READ/FILES filename -- will send you the file you require.
READ/BULLETIN filename -- send you the selected bulletin.

REMEMBER -- Help on any of the above commands is always
online and contains much more information than is given here.
The enclosed excerpt from the Cluster manual also is a handy
reference for information.

PLEASE REMEMBER that you are sharing this network and its
resources with your other DXer friends--be considerate of
them--do not hog the airtime with needless ragchewing--keep
it brief and DX related, keep your equipment operating
properly and adjusted correctly.

By the way when you wish to remain connected, but not in the
shack enter a SET/NOHERE and a set of parentheses is placed
around your call in the user list signifying your
un-availability at the moment. When you return, in a SET/HERE
and they are removed.

Any assistance you need, just to a Talk ~~KB4HU~~ _W5HVV_ and 1 will do
my best to be of assistance if I'm online.

(Soya Wanna Get on Packet)

For Aspiring DX PACKETCLUSTER Participants

The present Southeast PACKETCLUSTER Network consists of seven Nodes and a number of digital repeater switches. The Nodes, running a software package hosted on an IBM PC, are located in Nashville, TN (KB4HU), Huntsville, AL (K4CEF), North Atlanta (W8ZF), South Atlanta (W1UA), Chattanooga (W4KAU), Knoxville (AG4M) and Charlotte, NC (KD4IL). The nodes are all interconnected in real-time, and a user on any node has access to DX information called in by ALL the users on the network. The mode of communication inter-Node and between users and Nodes is Amateur Packet Radio. This is a digital communications medium whose primary distinguishing characteristics are: 1. Data transmissions from a station are sent in short bursts, or PACKETS and 2. Two stations are CONNECTED to each other under a set of rules called AX.25 Protocol which allows error checking and re-transmission if necessary. The transmission medium of choice is 1200 baud AFSK or 2400 baud PSK using ordinary 2-meter radios.

At present, each node operates on a different, local frequency, which is coordinated within that node's respective state. Locally, we operate on TWO frequencies -- 144.93, and 145.75 mhz. Each PACKETCLUSTER Node can support up to 50 users. A user COMMANDS his packet station to establish a connection to the Node, and thereafter commands are sent to the PACKETCLUSTER Node as CONVERSational text by typing on a keyboard. The commands are interpreted by the Node and the appropiate response is sent back to the user and appears on the terminal screen.

The necessary equipment for operating as a PACKETCLUSTER user is a terminal or computer with a simple terminal program, a 2-meter transceiver capable of operating on the local PACKETCLUSTER frequency, and a Terminal Node Controller, or TNC. The TNC interfaces to the terminal or computer via a digital interface and ASCII data flows between the two. The TNC interfaces to the 2-meter rig via three lines. Audio is fed from the TNC to the radio microphone input, audio is fed from the radio speaker output to the TNC audio input, and a PTT line from the TNC to the radio keys the transceiver.

There is absolutely no need to use a computer as a terminal unless you happen to have one around that you don't mind dedicating to PACKETCLUSTER. But running a Turbo PC/AT with PROCOMM or XTALK is a bit of overkill. PACKETCLUSTER maintains all the necessary information in its own files, and so there is no real need for a "smart terminal" emulator with upload and download capability. A "dumb terminal" is all that is required.

The primary consideration is that your TNC should support AX.25 Level 2 Version 2 Protocol. If it does not, you will not be able to interface with PACKETCLUSTER. All TAPR-2 TNCs and clones (MFJ-1270, AEA PK-80, PACCOMM 200s) running version 1.1.2 or higher; all Kantronics running version 2.0 or higher support this protocol. BUT -- There is a command called AX25L2V2 which MUST BE ON. The TNC may come from the factory with this command defaulted to OFF. It MUST be ON!

A second consideration is what kind of computer or terminal you are using. All TNCs support an RS-232 terminal interface. However, the venerable Commodore-64 does not have a true RS-232 compatible interface, but rather a C-64 terminal program programs the user port (the edge connector on the left rear as you are looking from the front) to support ASCII communications with TTL levels (0 and 5 volts). All Kantronics TNCs, the MFJ-1270 and 1274, and the PACCOMM 220 (Not the 200) make provisions for a TTL interface. So if you plan to use a C-64 with a terminal program you should consider one of the TNCs that supports TTL interface. Alternately, you can get a TTL-to-RS-232 converter for the C-64 but they tend to be rather expensive, on the order of $40.00.

The next consideration is a good antenna system. You will not be successful using a rubber duck on a H-T or a mag-mount on top of the desk. Packet is VERY suceptible to multipath distortion, and a good outside antenna is a must. Assuming you already have a 2-M antenna on the tower for a voice repeater, add a second one dedicated to packet, the higher the better. If vertical space is a problem, the 4-element Cushcraft 147-4 makes a good antenna. If you have a reasonable chance to communicate with the PACKETCLUSTER Node directly rather than through a digipeater or node switch (see below), then make every effort to do so. It makes the network more efficient. It is also important that you can hear as many of the other users as possible to reduce the chance of collisions (two packets being transmitted at the same time) and this as well argues for a good antenna system.

Now, this will not be a dissertation on how to operate packet. But, READ YOUR MANUAL and especially learn the difference between COMMAND and CONVERSE mode. In COMMAND mode you are talking to the TNC and anything you type is interpreted as a command by the TNC. In CONVERSE mode you are talking to the world and anything you type is interpreted as text and is sent out over the air as a packet when you hit a carriage return (C/R). You get into COMMAND mode by typing CRTL-C (C/R), and you know you are in COMMAND mode because the TNC sends the prompt cmd:. If you are in COMMAND mode you get into CONVERSE mode by typing the command CONVERSE (or CONV for short). If you are in CONVERSE mode and you wish to return to COMMAND mode, this is done by typing CONTROL-C (Holding the CTRL key down while simultaneously typing a "C") The PACKRATT-64 and some special terminal programs for the C-64 use one of the function keys F1-F8 to move back and forth between COMMAND mode and CONVERSE mode. But remember, if you want to tell the TNC to do something you must be in COMMAND mode, and if you want to tell PACKETCLUSTER to do something, you must be in CONVERSE mode.

One of the big problems we have found is that many users feed a signal from their TNC to their radios that is too high in level. The result is overdeviation, distortion, and in general it doesn't work. Most 2-M radios have limiter diodes somewhere in the audio path and if your input audio level is too high you will be slamming up against the limiter diodes and feeding square waves to the modulator. On the air it sounds like a demented buzz-saw. Most modern 2-M rigs that use an electret microphone require an audio level somewhere in the range of 10 to 20 millivolts peak-to-peak. The best way to set it up is to set the deviation to 3.5 - 4.0 khz with a deviation meter.

But you don't really need a deviation meter. TNCs have a "CALIBRATE" or
similar command which allows you to key the rig and send a packet tone.
Listen to your transmitted signal with another rig, and turn up the level
until the perceived volume stops increasing. At this point, you are up
inst the limiter diodes. Now back off the input level (level of audio
m the TNC to the 2-M radio) until you hear the perceived volume
decrease. Turn it down a bit more, and you will be close enough for all
practical purposes. The audio should sound clean with no distortion or
harshness. TAPR-2 clones have an adjustment pot on the board, and
PACKRATTS have an adjustment accessible through a hole in the side of the
unit. Kantronics TNCs have two fixed output levels selectable with
a jumper, and if one of these does not work you may have to open up the
2-M rig and find the mic gain control. If this is necessary, be sure you
adjust the mic gain control and not the deviation control. The mic gain
control is before the limiters and the deviation control is after the
limiters.

There are several timing parameters which you need to set properly. In
the discussion to follow, the times will be given in milliseconds, but
the units of various timing parameters vary according to the TNC. Check
your manual for the proper conversion.

TXDELAY is the delay interval between key-up and start of data
transmission. Normally 300-400 milliseconds is adequate, but some 2-M
rigs take a bit longer to get up to speed after the keying line is
asserted. If you seem to be having a problem being heard and all else
seems OK, try increasing TXDELAY to 400-600 milliseconds.

PACKETCLUSTER sends a group of packets to users in a single transmission.
The node switch or digipeater immediately repeats those that it has been
ed to, but after the carrier drops there can be a problem if everyone
ies to ACK at once. Therefore the parameters RESP (Response Time) and
DWAIT are assigned to individual users to allow staggering of ACKS. RESP
is the time delay between reception of a packet and transmission of an
ACK, and DWAIT set the delay between when activity is last heard on the
channel and key-up. You will be requested to set values of RESP and DWAIT
in milliseconds, and don't forget to convert to get the proper value to
command into your TNC. For example, if you have been asked to set DWAIT
to 600 milliseconds and the units of DWAIT for your TNC are 10
milliseconds, then you would command DWAIT = 60.

Kantronics Firmware Version 2.82 and later has the commands PERSIST and
SLOTTIME, which help enormously in avoiding collisions. PERSIST sets the
probability that a packet will be transmitted at a given time, and
SLOTTIME governs the interval between transmission trials. Initially
PERSIST should be set to 64 and SLOTTIME to a value of 10, which is
equivalent to 100 milliseconds.

FRACK should be set to 5 and RETRY to 10. FRACK sets the number of
seconds between retries and RETRY sets the number of times your TNC will
retry a packet before it gives up. Remember to set AX25L2V2 ON, or you
will bomb the system. NEVER, NEVER, NEVER send an XOFF (CTRL-S) to your
TNC without clearing it with an XON (CTRL-Q) ASAP. You may use an XOFF,
for example, to stop information scrolling on your screen, but don't
leave it that way for long. The problem is that your TNC buffer can fill
m and if PACKETCLUSTER tries to send additional information your TNC

will send a RNR (Receive not Ready) packet and cause PACKETCLUSTER to die a horrible death. As well, this sort of thing could happen if you are loading text into a capture buffer of a terminal program and the capture buffer fills, causing the terminal program to send an XOFF to the TNC.

If all of this sounds preachy, you must remember that when you check into PACKETCLUSTER you become part of a six-state network involving seven nodes and many users. If your setup is marginal requiring a lot of retries (retransmission of packets) or if you do something to bomb the system then you are affecting a real-time network. Not quite the same as a keyboard-to-keyboard QSO or logging into a packet bulletin board system where only yourself and one other entity are affected. The PACKETCLUSTER Network IS NOT the place to check out your packet system or to learn how to use it. You can always arrange to go off on another frequency with another packet operator for your on-the-job training. You do not have to be a computer expert to successfully operate packet radio, but it does require more committment than just picking up a 2-M Hand-Held and blathering drivel over the local voice repeater.

SUMMARY OF TNC SETTINGS

AX25L2V2 ON
DWAIT 500 Milliseconds
RESP 1500 Milliseconds
TXDELAY 300-400 milliseconds should be sufficient
FRACK 5
RETRY 10
PERSIST 64 (If applicable)
SLOTTIME 10 (If Applicable)

The local PACKETCLUSTER SYSOP may request you to change one or more of these parameters. You will, of course, be familiar with these commands and will cheerfully comply with the SYSOPs request.

****

CONNECTING TO PACKETCLUSTER THROUGH RELAY STATIONS

If unable to connect directly to a PACKETCLUSTER Node, it will be necessary to use some form of relay station or node switch. There are three possibilities; DIGIPEATERS, NETROM/THENET NODES, and KANTRONICS KA-NODES.

A DIGIPEATER is, as its name implies, a digital repeater that simply repeats packets. The snytax for establishing a connection through a Digipeater is CONNECT K4CEF VIA N4KTY-1, where N4KTY-1 is the callsign of the digipeater. Most times digipeaters will have an SSID other than 0 (no SSID) to distinguish it from a home station with the same callsign. (For more information on digipeaters, see your TNC manual).

NETROM/THENET Nodes and KA-NODES are advanced "Level 3" switches that greatly facilitate movement of packet traffic. To use these devices, you first connect to the switch, and then instruct the switch to connect to a

distant station. The switch will issue a connect to that station on your behalf, and using your callsign with the SSID changed. THENET/NETROM nodes change the SSID from N to 15-N, while KA-NODES change the SSID from N to N-1. This is done to prevent confusion in the event of unusual pogation where the station could hear both your home station as well the switch, i.e. two stations with identical callsigns. Operationally, the result is that if you are connecting to PACKETCLUSTER through a switch, and you are using MYCALL-0, you will appear to PACKETCLUSTER as MYCALL-15. It really doesn't hurt anything, it is just inelegant and stamps you as a DXer of a Lesser God. In either case you will appear as MYCALL-0 to the PACKETCLUSTER Node, since PacketCluster strips away the SSID number for purposes of keeping the User List simple to use.

Here is an example of a connect to a PACKETCLUSTER Node using a NETROM switch. The PACKETCLUSTER Node is K4CEF, the Switch is K4CEF-1, Alias HSVDX.

cmd: C K4CEF-1 (You issue a connect to switch K4CEF-1)

*** CONNECTED to K4CEF-1 (Your TNC tells you that connect
                            was successful)

C K4CEF (You instruct the switch to connect to K4CEF on your
          behalf - This is a CONVERSE MODE Packet)

HSVDX:K4CEF-1) Connected to K4CEF (The K4CEF-1 switch
                                    informs you that the connect
                                    to K4CEF was successful)

Connecting through a KA-NODE is essentially an identical procedure,
   cept that the KA-NODE includes a connect message with a prompt line,
 .nd indicates a successful connect with the message ### LINK MADE.
Whatever the case, it is not possible to cover all possible network situations in this brief explanation, and you will in all likelyhood find it necessary to contact the PACKETCLUSTER SYSOP for detailed instructions appropiate to your particular situation.

                ADDITIONAL INFORMATION FOR PACKRATT-64 USERS

The AEA PACKRATT-64 has a number of negative features which have caused severe problems. We would rather that none be used on the Network, but if you must, READ and UNDERSTAND the following information and perhaps you will be able to stay off of the SYSOPs LIDLIST.

The PACKRATT-64 does not store set-up parameters in BB RAM. If you have a disk drive, the parameters can be stored on disk in PARAMETER FILE 0, and when you boot up PACKRATT by typing "SYS33333" it will look for that file on the drive. If you have no drive, or if that parameter file is not present, then PACKRATT boots up with the default parameters which are not suitable for operation with PACKETCLUSTER.

If you have a disk drive, you should set the parameters and then save the
 et-up to disk as parameter file 0. If you have no drive, then you must

set the parameters each time you boot up by going to the packet parameter
screen. Sorry, but that's the way it is. Simply typing MYCALL W4XXX will
not do the job. The default parameters are:

AX25L2V2 OFF
DWAIT 2 (Units are 40 milliseconds)
FRACK 3 (Units are 1 second)
RESPTIME 12 (Units are 100 milliseconds)
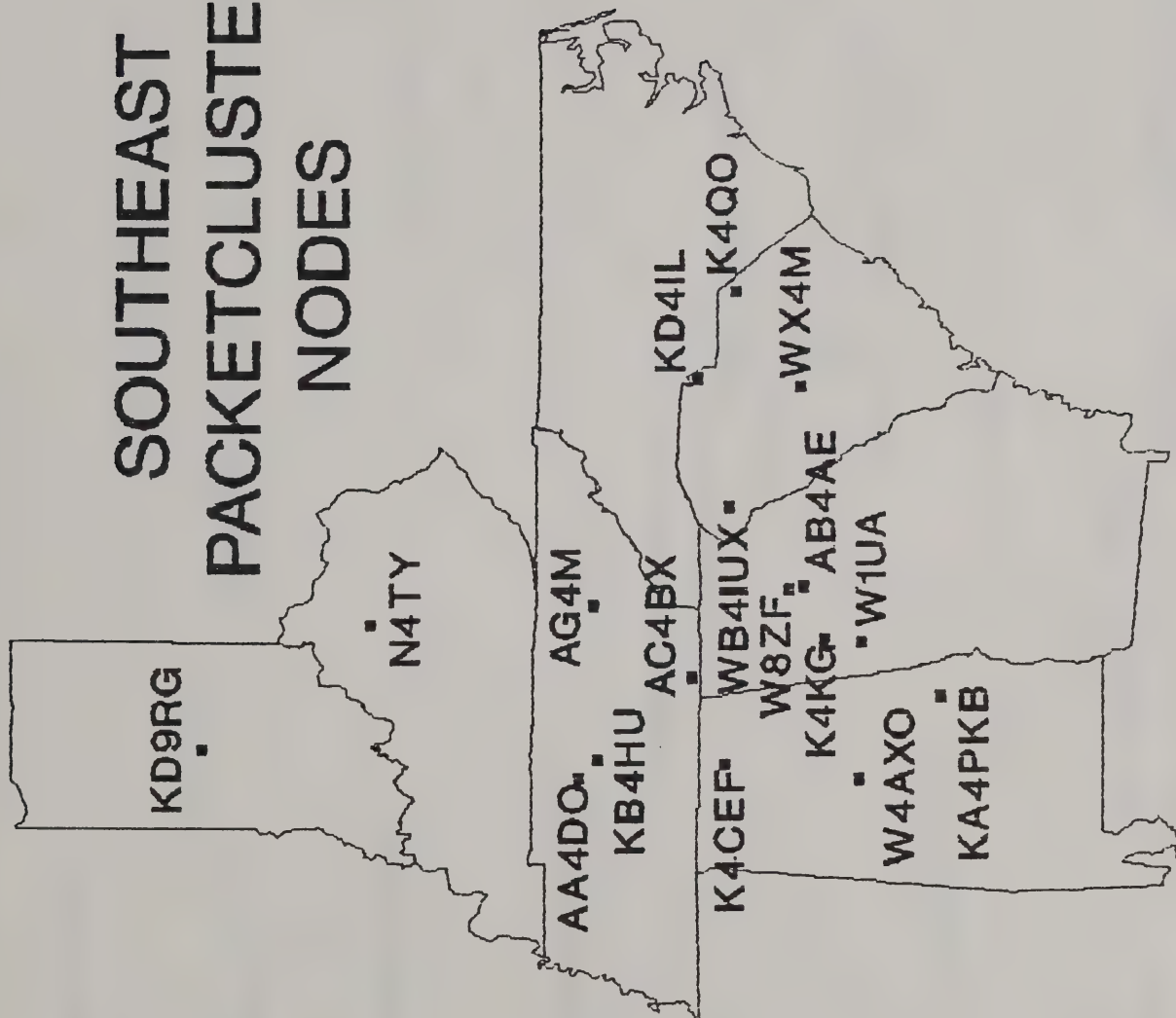TXDELAY 4 (Units are 40 milliseconds)
MYCALL PK64

These should be changed to:

AX25L2V2 ON (THE MOST IMPORTANT)
DWAIT 4
FRACK 8
RESPTIME 16
TXDELAY - 8 should be sufficient, but maybe longer
MYCALL - As appropiate

When the qso capture buffer is open (20K Bytes) it simply wraps around
when it fills, FIFO. But - there is a screen hold function (Function key
F1) which stops the screen from scrolling. The problem is that the buffer
assigned to store incoming data while you have the screen hold on is only
1000 bytes long, or about 12 lines of 80-column text. When this buffer
fills, then PACKRATT will send Receive-not-Ready packets in response to
any incoming data and this will bomb PACKETCLUSTER. Hitting RUN/STOP and
then using the BROWSE function will also cause the PACKRATT to send
Receive-not-Ready packets and will also bomb PACKETCLUSTER.

June 25, 1989
N4KTY   A.K.A. Captain Packet

SOUTHEAST PACKETCLUSTER NODES

KD9RG

N4TY

KD4IL

K4QO

WX4M

AG4M

AA4DO

KB4HU

AC4BX

WB4IUX

W8ZF

K4KG

AB4AE

W1UA

K4CEF

W4AXO

KA4PKB

BGNDX Bowling Green, KY (2)

NASDX4 Greenbrier, TN (2)

K B 4 H U Nashville, TN (1)

NASDX Murfreesboro, TN (2)

HSVDX Huntsville, AL (2)

K 4 C E F Huntsville, AL (1)

TUSDX Tuscumbia, AL (2)

BHMDX Birmingham, AL (2)

FTPDX1/2 Ft. Payne, AL (5)

TOX Toxaway, NC (4)

K D 4 I L Charlotte, NC (1)

CAT Catawba, SC (6)

ATL Cumming, GA (4)

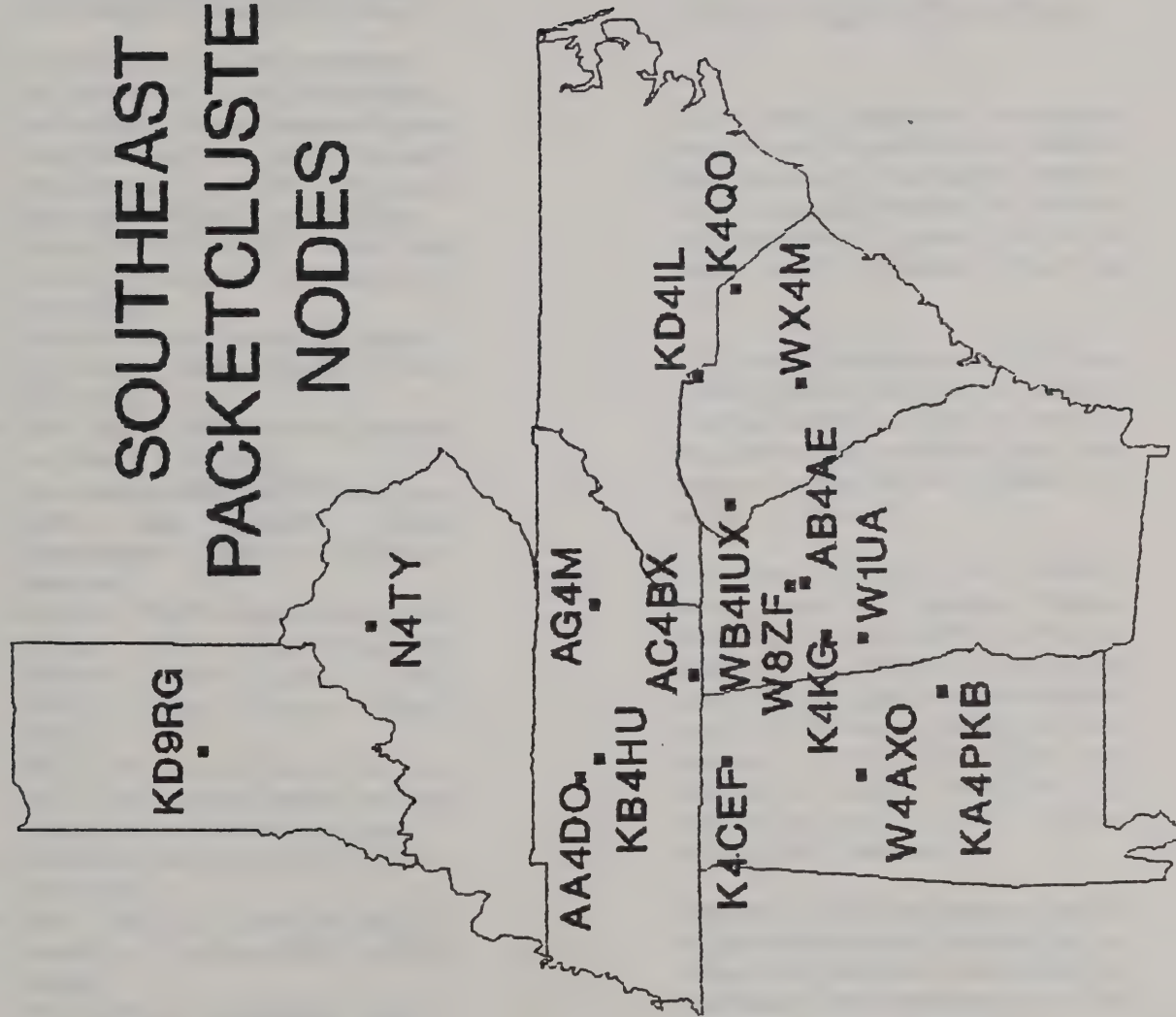W 8 Z F Atlanta, GA (3)

W 1 U A Newnan, GA (3)
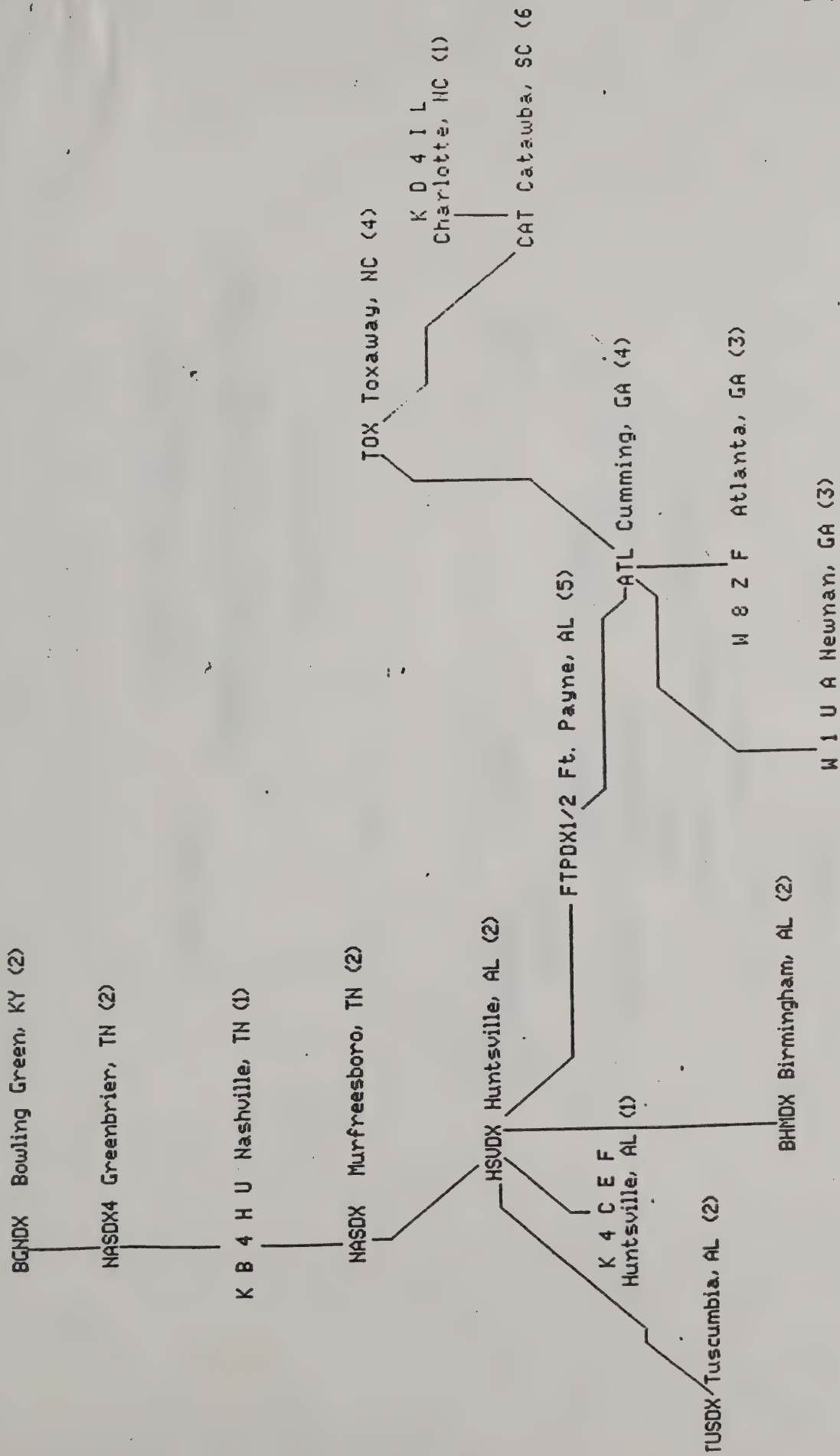
SOUTHEAST PACKETCLUSTER NETWORK

1) 1200 Baud PacketCluster Node
2) 1200 Baud NETROM/THENET
3) 2400 Baud PacketCluster Node
4) 2400 Baud NETROM/THENET
5) 1200/2400 Baud NETROM/THENET
6) Kantronics KA-Node

SOUTHEAST
PACKETCLUSTER
NODES

KD9RG

N4TY

AG4M

AA4DQ
KB4HU

AC4BX

K4CEP

WB4IUX
W8ZF
K4KG
AB4AE

W1UA

W4AXO

KA4PKB

KD4IL

K4QO

WX4M

George - some of this is pertinent only to KB4HU's node & his local users: such as his frequencies, etc. Filter out the non-relevant info!!

Rod

OPERATING COMMENTS

o Connect, following local procedures
o Stay connected!   Avoid short duration activity.Each connect-disconnect action sends your sign-on or sign-off to each node,increases backbone frequency traffic and slows down the CLUSTER.
o Monitor the CLUSTER when first starting to get a better understanding of its operation.
o Report any new and unusual DX activity. This is the primary purpose of the CLUSTER.
o Check your mail once or twice per week and delete it after reading.
o Use recommended CLUSTER syntax rather than common PBBS abbreviations. There may be different meanings.
o Use the HELP command whenever necessary to better understand intended Command. Record it locally at your station for future reference to avoid repeats.
o Don't leave your Radio & TNC on without the computer and its terminal communications software on as well.
o Be Patient! Sometimes the CLUSTER can be slow.
o The   CLUSTER does not support connection to outside PBBS or NTS routing.
o Word wrap is not supported. Send a <CR> at the end of each line of text.
o Recommended TNC settings:

     RESPtime   : 1500ms
     TXDelay   :   300-400 ms
     AX25L2V2 : ON
     FRACK   :   5
     RETRY   : 10
     BEACON :   OFF or DISABLE

LOCAL CONNECT INSTRUCTIONS:

Frequency: @   BPS
      Route:

DX PACKET CLUSTER

The DX Packet Cluster is an on-line multi-state interactive network of Amateur Radio stations. It is exclusively dedicated to promoting and enhancing the ability of its participants to engage in timely contacts with DX stations around the world.

This Guide is designed to provide the user, a quick reference for some of the more common commands which allow access to the Cluster's unique attributes, along with notes on getting started, operation and syntax requirements.

The Cluster consists of 14 individual Nodes located in Alabama, Georgia, Tennessee, Kentucky, North Carolina and South Carolina. Each Node can support between 25 and 50 stations and is attached to other Nodes via a central backbone frequency.   Thus the Cluster can theoretically represent the ongoing DX interests of up to 700 stations, simultaneously connected.

Because of its size, care must be taken by the individual operator to ensure that no actions are initiated that would be detrimental to the overall operation of the Cluster and connected stations.

WHAT DO I NEED TO USE THE PACKETCLUSTER?

Any average packet station will do. Basically, you need a
Terminal Node Controller (TNC), a 2 meter transceiver (use of
handy-talkies is definitely discouraged), and a simple CRT
terminal and keyboard. The latter requirement may be met by a
small personal computer running under some kind of terminal
software package such as is used to interface the computer to
a telephone modem. Simple programs are available for all the
popular types of personal computers. Many users have only,
"dumb" ASCII terminal connected to their TNC--and this
suffices quite nicely.

The CRT display associated with the terminal or computer
should have preferably, 80 columns since the information
presented is formatted that way. In the case of a personal
computer, some types are more prone to emitting radio-
frequency interference than others and this should be
examined before making your purchase. We have had some cases
where the emissions of the computer or terminal are so
horrendous as to make simultaneous and operation between an
HF radio and the packet network impossible and this greatly
reduces the effectiveness of this tool as an online aid.

Several TNC's are available and all operate basically the
same way, but, as with any equipment, some are better that
others. The most popular units are built by AEA, Kantronics,
and MFJ. DRSI also builds a TNC for the IBM PC and clones,
which is completely internal to the computer. All are
compatible with each other. Use of the PK-64 which plugs
directly into the Commodore 64 is discouraged as it has
several small quirks which make life difficult for the user
and the network, however some of these are being used on our
network quite successfully. Please remember, that whatever
you do on a multi-user network affects people on the entire
network.
If your equipment causes constant retires because it is not
tuned properly, or does not have the timing parameters set
properly, it takes up unnecessary time on the channel by
asking for the repeat of data. This slows down the entire
system--not just the individual user. Notes on all the above
are contained in the following section.

Most antennas are OK to use--it is important that you put a
nice clean signal into the system and have your deviation
adjusted properly--and it is fairly important that you are
heard by as many users around you as is practical--this
nature of packet is such that it does its best to avoid
collisions with other packets--and that means it is necessary
that other DXers on the system hear you as well as making
sure the network node hears you--so DO put in a decent
antenna--beams are best--no rubber ducks!!

A user owes it to himself and to the other users of the
network to enter the system with a thoroughly debugged packet
system. The network is NO PLACE to learn packet. READ YOUR
MANUAL and experiment some on a simple frequency with a
friend. Learn to use the bulletin boards and digipeaters on
145.01. Only then should you tackle the network! It is a
sophisticated system , very user friendly, but delicate,
which can be brought to its knees by a poorly adjusted or
poorly operated packet station.

HOW DO I GET INTO THE PACKETCLUSTER?

Once you feel you are comfortable and somewhat competent with
the packet equipment, have tried out several packet QSO's,
have the basic of adjusting your timing parameters down, and
have read your manual, you're ready to tackle the network.
The frequencies are 145.75 and 147.585. I try and have the
users that access the node directly on 147.585. The
frequency is 145.75 is used primarly for users connecting
in via a netrom. Put your 2 meter radio on either frequency,
make sure your radio is in simplex mode. Put your TNC in
COMMAND mode (CMD:) and type CONNECT KB4HU <carriage return>.
If you are close enought to connect direct you'll get an
immediate response. If you cannot reach KB4HU directly,
the net/rom connect procedures are, from the (CMD:),
C NASDX4. You will get a connected to NASDX4/K4UVH-4. Once
you are connected to the net/rom you will enter C KB4HU.
NETROMS are located in Murfreesboro (NASDX), Ridgetop
(NASDX4), and Bowling Green (BGNDX) on 145.75 and Franklin
FKLNDX on 147.585. When the PacketCluster responds, you will
be given a welcoming message from the Middle Tenn DX Packet
Network and told to type a ? of an H for additional help. If
you do this, the system will respond with a menu of commands
and a very brief description of each, that will allow you to
use the network. For starters, try a SHOW/CLUSTER. When you
type this in, the system, will respond with a totals table
that lists all of the folks, who are connected to the system
at the moment, with the number of nodes, local users and
system user connected at that time. After you try this, you
can then type in SHOW/DX. The system will respond with the 5
latest entries from the DX log--these contain the Call,
Frequency, Date and Time of the entry and the call letter of
the Dxer who entered it.

After this, you can just sit back awhile and peruse the list-
but stay connected. If things are normal, the others on the
system will be entering DX periodically, and this will flash
immediately onto your screen along with a 'BEEP' from your
terminal to alert you that there is new DX data coming in.
This data is being entered in real-time by the other users of
the system and you are able to enter it also when you feel a
little more comfortable.

Early on, you should do a SET/NAME and put you name into the
user file. Also do a SET/QTH followed by you city and state
and a SET/LOCATION on which you specify you latitude and
longitude--help is available on this so you can get the
format right--this data is used for the online Heading and
MUF calculations you'll find out about in the following
sections.

There are a whole repertoire of instructions--a list of them
and a description of each is contained in the excerpt from
the Pavillion Software PacketCluster manual which we've
included. If you are online and forget the details of one of
the commands, simple type HELP followed by a space and the
command you're having trouble with, and a help file will
appear on your screen. To save time use this manual.

Using the system is like anything else--it takes practice--
and we understand that. There are so many things available
here that it can do, that it takes time to learn them all--
and they will truly amaze you--yet they are all basically
very simple--and your DXer friends are already doing it--
people who, like yourself, had no acquaintance at all with
packet, or digital communication in general a few weeks ago
and who are, today, using the system with great ease.

Bear in mind that, though there a lot of things the system
will do, the MAIN FUNCTION is as an alert tool--and what
makes this valuable, is the fact that a lot of the folks
doing the alerting are DXers in other parts of the south that
are not available to us on the voice repeater--they are far
away, hearing different things that we can hear here at
different times and different propagation conditions. They
talk to different people every day than we do and propagate
different rumors! Typically, the Atlanta and Charlotte folks
hear things a bit earlier than we do--particularly on the low
bands--they have sunrise and sunset an hour earlier than we
do, so they are excellent help as to previewing what you'll
hear in a little while!

WHAT DATA IS AVAILABLE ON THE PACKETCLUSTER?

As we said a list and description of the commands follows in the book but some of them are summarized below.

SHOW/DX lists the latest 5 DX entries. You can modify this if you like and get more, say 12, by doing a SHOW/DX/12. You can make it band selective, if you like, by typing in SHOW/DX 15. Note the space there--that will give you 15 meter entries only. You can also use these command to search the DX database for information on times, dates and frequencies for stations you're seeking--such as SHOW/DX 40 VS6 which will list the last 5 40 meter VS6 entries! This is a terrific search tool. No longer will you have to ask on the repeater if anyone can remember the time or frequency a station last appeared--it is right here and available on your packet terminal! Help is as close as typing HELP SHOW/DX.

SHOW/SUN is for the lowbanders. This command is followed by a prefix--anything from the countries list. Example is SHOW/SUN ZL which shows you today's sunrise and sunset times in New Zealand!

SHOW/MUF followed by a prefix shows you the maximum and minimum usable frequencies to that country for the current clock time--a great on line tool for scheduling your contacts on another band.

SHOW/HEADING followed by a prefix gives you the great circle route heading based on your own latitude and longitude-- online help for which way to point the beam. It also gives you the distance in statute miles for the path and indicated the CQ Zone Number (1 thru 40), in which the country resides.

SHOW/USERS gives you an immediate list of all the people currently connected to the system. Typically, when you do a SHOW/USERS you will see the calls of 90-125 other DXers who are currently logged onto the network. SHOW/USER, followed by a call, will search the user file and respond with that person's name and QTH of he has entered it. We keep this file online all the time.

SHOW/CONFIGURATION is a variation on SHOW/USERS--gives you the same data, by shows you which user is connected to which node--i.e. a list of all the users on the Huntsville (K4CEF) node, followed by all the users on the Charlotte (KD4IL) node, Atlanta (W8ZF), Newman (W1UA--west central Georgia), two additional Atlanta nodes (AB4AE and K4KG), Chattanooga (W4KAU), Knoxville (AG4M), Lexington (N4TY),and Nashville (KB4HU) nodes also Birmingham is online.

Enter DX into the system by typing DX callsign frequency.
You may also enter it as DX frequency callsign--the order
does not matter.

The information you enter will be distributed to all the
other users in the system and the system will automatically
append today's date, the time (UTC), and your call, and enter
it into the DX log file. There is also space for remarks as
necessary. An example would be:

                DX VK9ZW 14020 Good signal--LP
                              or
                DX 14020 VK9ZW Good signal-LP

The information will be distributed to the rest of the
network and appear on all the other user screens in the
system as follows:

DX de AA4DO:14020 VK9ZW Good signal--LP 22-Jan-1989 0242Z

SHOW/WWV will give you the 5 latest WWV propagation report
entries including the Solar Flux, A Index and K Index along
with the forecast. This data is also used in the SHOW/MUF
calculations.

There is also a SHOW/OBLAST command for those interested in
finding out what oblast a given Russian callsign is in. You
can do a SHOW/OBL followed by a return to get extra help on
this one.

You can use the TALK command (TALK callsign) to send a
message to anyone in the user list--regardless of which city
hs is in--the computers do the work of message routing etc.
There are two kinds of Talk command--the full Talk mode is
entered by doing a TALK followed by a callsign and a carriage
return. This puts you in the Talk mode until you type a
Control Z and terminate it--it is used when you intend to
carry on a brief conversation with someone that may encompass
several lines. Remember that anything you type from here on
out is sent to that person--so it takes special care, once
you're in Talk mode, to do a SHOW/USERS or a SHOW/DX. You
must preface this with a * or else the person you're Talking
to sees a SHOW/DX suddenly on his screen.

The second type of Talk mode is used for simple one line
messages and in by far the most often used. Talk callsign
followed by a one line message before the carriage return
will accomplish a lot. Again, you can do on e of these to
any user and send him brief message.

ANNOUNCE will make an announcement to ~~everyone on the~~ local listeners
~~network--on all nodes.~~ This is good for notices of DX
interest such as:

ANNOUNCE FR5DX will be on 28510 at 1530Z tomorrow.
You may also announce selectively by node by typing
ANN/NODECALL (the callsign of the node where you wish to make
the announcement). And example:

          ANN/KB4HU DX net at 0900Z 145.29.

ANN/K4CEF Can someone get Bart on. New country for him.
ANN/FULL Will make a system wide announcement.

We have added a few commands on out own to the Cluster:

SHOW/QSL callsign -- An online QSL managers directory. This
will search the online file to see if we have the QSL manager
you're looking for/ If we have a direct address or a manager
listing, we will send you this information in the next
packet. this is not intended to be as complete as a W6GO
Directory would be, but we do provide current information on
a great many of the more popular Dx stations and expeditions.

SHOW/ROSTER callsign-- an online name, address and telephone
member listing for each user of the Nashville node.

SHOW/NEWS This information is loaded weekly from the most
recent QRZ DX bulletin highlights.

SHOW/NEED This will display all the users who would like to
be notified that a specific station is on.

The DX PakcketCluster contains an excellent online mail and
BBS service. It can be used to send mail to users which are
anywhere in the network. Forwarding of mail and bulletins is
automatic between nodes, and it is not necessary to know the
location of the station you're sending mail to.
The following commands are used to operate the bulletin board
from within the Cluster:

SEND callsign -- initiates a mail message to the station
specified. The Cluster will prompt you for a subject, and for
your text. Terminate the message with a Ctrl Z or /EXIT on a
separate line.

READ -- When your told that you have mail waiting when you
sign on, you can type READ and get the oldest message that is
directed to you. When you finish, you can type REPLY,
REPLY/DELETE, or READ again. If you type READ again, you'll
get the next oldest message for you. READ followed by a
message number, will transmit the contents of that message to
you.

REPLY -- allows you to reply immediately to a message you have just read. The Cluster prepares the heading and the subject line. REPLY/DELETE will prepare your reply, and delete the message you're replying to when you're finished sending.

DELETE -- This deletes the message you just read, or, when followed by a message number, deletes that message if you are the sender or the recipient.

DIRECTORY -- Sends you a directory of the last 5 messages on the BBS. DIRECTORY/ALL will send you the entire directory. DIRECTORY/NEW gets you the new entries, in the directory since the last time you issued a DIRECTORY command, and DIRECTORY/OWN will display on the titles of messages addressed to you, or sent by you.

SHOW/FILES -- shows you the contents of the FILE area. You may read any file with the TYPE command.

SHOW/BULLETIN -- shows you the contents of the bulletin area. We keep current DX and propagation bulletins here for downloading.

READ/FILES filename -- will send you the file you require. READ/BULLETIN filename -- send you the selected bulletin.

REMEMBER -- Help on any of the above commands is always online and contains much more information than is given here. The enclosed excerpt from the Cluster manual also is a handy reference for information.

PLEASE REMEMBER that you are sharing this network and its resources with your other DXer friends--be considerate of them--do not hog the airtime with needless ragchewing--keep it brief and DX related, keep your equipment operating properly and adjusted correctly.

By the way when you wish to remain connected, but not in the shack enter a SET/NOHERE and a set of parentheses is placed around your call in the user list signifying your un-availability at the moment. When you return, in a SET/HERE and they are removed.

Any assistance you need, just to a Talk KB4HU and 1 will do my best to be of assistance if I'm online.

(Soya Wanna Get on Packet)

For Aspiring DX PACKETCLUSTER Participants

The present Southeast PACKETCLUSTER Network consists of seven Nodes and a
number of digital repeater switches. The Nodes, running a software
package hosted on an IBM PC, are located in Nashville, TN (KB4HU),
Huntsville, AL (K4CEF), North Atlanta (W8ZF), South Atlanta (W1UA),
Chattanooga (W4KAU), Knoxville (AG4M) and Charlotte, NC (KD4IL). The
nodes are all interconnected in real-time, and a user on any node has
access to DX information called in by ALL the users on the network. The
mode of communication inter-Node and between users and Nodes is Amateur
Packet Radio. This is a digital communications medium whose primary
distinguishing characteristics are: 1. Data transmissions from a station
are sent in short bursts, or PACKETS and 2. Two stations are CONNECTED to
each other under a set of rules called AX.25 Protocol which allows error
checking and re-transmission if necessary. The transmission medium of
choice is 1200 baud AFSK or 2400 baud PSK using ordinary 2-meter radios.

At present, each node operates on a different, local frequency, which is
coordinated within that node's respective state. Locally, we operate on
TWO frequencies -- 144.93, and 145.75 mhz. Each PACKETCLUSTER Node can
support up to 50 users. A user COMMANDS his packet station to establish a
connection to the Node, and thereafter commands are sent to the
PACKETCLUSTER Node as CONVERSational text by typing on a keyboard. The
commands are interpreted by the Node and the appropiate response is sent
back to the user and appears on the terminal screen.

The necessary equipment for operating as a PACKETCLUSTER user is a
terminal or computer with a simple terminal program, a 2-meter
transceiver capable of operating on the local PACKETCLUSTER frequency,
and a Terminal Node Controller, or TNC. The TNC interfaces to the
terminal or computer via a digital interface and ASCII data flows between
the two. The TNC interfaces to the 2-meter rig via three lines. Audio is
fed from the TNC to the radio microphone input, audio is fed from the
radio speaker output to the TNC audio input, and a PTT line from the TNC
to the radio keys the transceiver.

There is absolutely no need to use a computer as a terminal unless you
happen to have one around that you don't mind dedicating to
PACKETCLUSTER. But running a Turbo PC/AT with PROCOMM or XTALK is a bit
of overkill. PACKETCLUSTER maintains all the necessary information in its
own files, and so there is no real need for a "smart terminal" emulator
with upload and download capability. A "dumb terminal" is all that is
required.

The primary consideration is that your TNC should support AX.25 Level 2
Version 2 Protocol. If it does not, you will not be able to interface
with PACKETCLUSTER. All TAPR-2 TNCs and clones (MFJ-1270, AEA PK-80,
PACCOMM 200s) running version 1.1.2 or higher, all Kantronics running
version 2.0 or higher support this protocol. BUT -- There is a command
called AX25L2V2 which MUST BE ON. The TNC may come from the factory with
this command defaulted to OFF. It MUST be ON!

A second consideration is what kind of computer or terminal you are using. All TNCs support an RS-232 terminal interface. However, the venerable Commodore-64 does not have a true RS-232 compatible interface, but rather a C-64 terminal program programs the user port (the edge connector on the left rear as you are looking from the front) to support ASCII communications with TTL levels (0 and 5 volts). All Kantronics TNCs, the MFJ-1270 and 1274, and the PACCOMM 220 (Not the 200) make provisions for a TTL interface. So if you plan to use a C-64 with a terminal program you should consider one of the TNCs that supports TTL interface. Alternately, you can get a TTL-to-RS-232 converter for the C-64 but they tend to be rather expensive, on the order of $40.00.

The next consideration is a good antenna system. You will not be successful using a rubber duck on a H-T or a mag-mount on top of the desk. Packet is VERY suceptible to multipath distortion, and a good outside antenna is a must. Assuming you already have a 2-M antenna on the tower for a voice repeater, add a second one dedicated to packet, the higher the better. If vertical space is a problem, the 4-element Cushcraft 147-4 makes a good antenna. If you have a reasonable chance to communicate with the PACKETCLUSTER Node directly rather than through a digipeater or node switch (see below), then make every effort to do so. It makes the network more efficient. It is also important that you can hear as many of the other users as possible to reduce the chance of collisions (two packets being transmitted at the same time) and this as well argues for a good antenna system.

Now, this will not be a dissertation on how to operate packet. But, READ YOUR MANUAL and especially learn the difference between COMMAND and CONVERSE mode. In COMMAND mode you are talking to the TNC and anything you type is interpreted as a command by the TNC. In CONVERSE mode you are talking to the world and anything you type is interpreted as text and is sent out over the air as a packet when you hit a carriage return (C/R). You get into COMMAND mode by typing CRTL-C (C/R), and you know you are in COMMAND mode because the TNC sends the prompt cmd:. If you are in COMMAND mode you get into CONVERSE mode by typing the command CONVERSE (or CONV for short). If you are in CONVERSE mode and you wish to return to COMMAND mode, this is done by typing CONTROL-C (Holding the CTRL key down while simultaneously typing a "C") The PACKRATT-64 and some special terminal programs for the C-64 use one of the function keys F1-F8 to move back and forth between COMMAND mode and CONVERSE mode. But remember, if you want to tell the TNC to do something you must be in COMMAND mode, and if you want to tell PACKETCLUSTER to do something, you must be in CONVERSE mode.

One of the big problems we have found is that many users feed a signal from their TNC to their radios that is too high in level. The result is overdeviation, distortion, and in general it doesn't work. Most 2-M radios have limiter diodes somewhere in the audio path and if your input audio level is too high you will be slamming up against the limiter diodes and feeding square waves to the modulator. On the air it sounds like a demented buzz-saw. Most modern 2-M rigs that use an electret microphone require an audio level somewhere in the range of 10 to 20 millivolts peak-to-peak.The best way to set it up is to set the deviation to 3.5 - 4.0 khz with a deviation meter.

But you don't really need a deviation meter. TNCs have a "CALIBRATE" or similar command which allows you to key the rig and send a packet tone. Listen to your transmitted signal with another rig, and turn up the level until the perceived volume stops increasing. At this point, you are up ¿inst the limiter diodes. Now back off the input level (level of audio)m the TNC to the 2-M radio) until you hear the perceived volume decrease. Turn it down a bit more, and you will be close enough for all practical purposes. The audio should sound clean with no distortion or harshness. TAPR-2 clones have an adjustment pot on the board, and PACKRATTS have an adjustment accessible through a hole in the side of the unit. Kantronics TNCs have two fixed output levels selectable with a jumper, and if one of these does not work you may have to open up the 2-M rig and find the mic gain control. If this is necessary, be sure you adjust the mic gain control and not the deviation control. The mic gain control is before the limiters and the deviation control is after the limiters.

There are several timing parameters which you need to set properly. In the discussion to follow, the times will be given in milliseconds, but the units of various timing parameters vary according to the TNC. Check your manual for the proper conversion.

TXDELAY is the delay interval between key-up and start of data transmission. Normally 300-400 milliseconds is adequate, but some 2-M rigs take a bit longer to get up to speed after the keying line is asserted. If you seem to be having a problem being heard and all else seems OK, try increasing TXDELAY to 400-600 milliseconds.

PACKETCLUSTER sends a group of packets to users in a single transmission. The node switch or digipeater immediately repeats those that it has been ¿)ked to, but after the carrier drops there can be a problem if everyone 2 Aies to ACK at once. Therefore the parameters RESP (Response Time) and DWAIT are assigned to individual users to allow staggering of ACKS. RESP is the time delay between reception of a packet and transmission of an ACK, and DWAIT set the delay between when activity is last heard on the channel and key-up. You will be requested to set values of RESP and DWAIT in milliseconds, and don't forget to convert to get the proper value to command into your TNC. For example, if you have been asked to set DWAIT to 600 milliseconds and the units of DWAIT for your TNC are 10 milliseconds, then you would command DWAIT = 60.

Kantronics Firmware Version 2.82 and later has the commands PERSIST and SLOTTIME, which help enormously in avoiding collisions. PERSIST sets the probability that a packet will be transmitted at a given time, and SLOTTIME governs the interval between transmission trials. Initially PERSIST should be set to 64 and SLOTTIME to a value of 10, which is equivalent to 100 milliseconds.

FRACK should be set to 5 and RETRY to 10. FRACK sets the number of seconds between retries and RETRY sets the number of times your TNC will retry a packet before it gives up. Remember to set AX25L2V2 ON, or you will bomb the system. NEVER, NEVER, NEVER send an XOFF (CTRL-S) to your TNC without clearing it with an XON (CTRL-Q) ASAP. You may use an XOFF, for example, to stop information scrolling on your screen, but don't leave it that way for long. The problem is that your TNC buffer can fill up and if PACKETCLUSTER tries to send additional information your TNC

will send a RNR (Receive not Ready) packet and cause PACKETCLUSTER to die
a horrible death. As well, this sort of thing could happen if you are
loading text into a capture buffer of a terminal program and the capture
buffer fills, causing the terminal program to send an XOFF to the TNC.

If all of this sounds preachy, you must remember that when you check into
PACKETCLUSTER you become part of a six-state network involving seven
nodes and many users. If your setup is marginal requiring a lot of
retries (retransmission of packets) or if you do something to bomb the
system then you are affecting a real-time network. Not quite the same as
a keyboard-to-keyboard QSO or logging into a packet bulletin board system
where only yourself and one other entity are affected. The PACKETCLUSTER
Network IS NOT the place to check out your packet system or to learn how
to use it. You can always arrange to go off on another frequency with
another packet operator for your on-the-job training. You do not have to
be a computer expert to successfully operate packet radio, but it does
require more committment than just picking up a 2-M Hand-Held and
blathering drivel over the local voice repeater.

SUMMARY OF TNC SETTINGS

AX25L2V2 ON
DWAIT 500 Milliseconds
RESP 1500 Milliseconds
TXDELAY 300-400 milliseconds should be sufficient
FRACK 5
RETRY 10
PERSIST 64 (If applicable)
SLOTTIME 10 (If Applicable)

The local PACKETCLUSTER SYSOP may request you to change one or more of
these parameters. You will, of course, be familiar with these commands
and will cheerfully comply with the SYSOPs request.

****

CONNECTING TO PACKETCLUSTER THROUGH RELAY STATIONS

If unable to connect directly to a PACKETCLUSTER Node, it will be
necessary to use some form of relay station or node switch. There are
three possibilities; DIGIPEATERS, NETROM/THENET NODES, and KANTRONICS
KA-NODES.

A DIGIPEATER is, as its name implies, a digital repeater that simply
repeats packets. The snytax for establishing a connection through a
Digipeater is CONNECT K4CEF VIA N4KTY-1, where N4KTY-1 is the callsign of
the digipeater. Most times digipeaters will have an SSID other than 0 (no
SSID) to distinguish it from a home station with the same callsign. (For
more information on digipeaters, see your TNC manual).

NETROM/THENET Nodes and KA-NODES are advanced "Level 3" switches that
greatly facilitate movement of packet traffic. To use these devices, you
first connect to the switch, and then instruct the switch to connect to a

distant station. The switch will issue a connect to that station on your behalf, and using your callsign with the SSID changed. THENET/NETROM nodes change the SSID from N to 15-N, while KA-NODES change the SSID from N to N-1. This is done to prevent confusion in the event of unusual propagation where the station could hear both your home station as well the switch, i.e. two stations with identical callsigns. Operationally, the result is that if you are connecting to PACKETCLUSTER through a switch, and you are using MYCALL-0, you will appear to PACKETCLUSTER as MYCALL-15. It really doesn't hurt anything, it is just inelegant and stamps you as a DXer of a Lesser God. In either case you will appear as MYCALL-0 to the PACKETCLUSTER Node, since PacketCluster strips away the SSID number for purposes of keeping the User List simple to use.

Here is an example of a connect to a PACKETCLUSTER Node using a NETROM switch. The PACKETCLUSTER Node is K4CEF, the Switch is K4CEF-1, Alias HSVDX.

cmd: C K4CEF-1 (You issue a connect to switch K4CEF-1)

*** CONNECTED to K4CEF-1 (Your TNC tells you that connect
                      was successful)

C K4CEF (You instruct the switch to connect to K4CEF on your
          behalf - This is a CONVERSE MODE Packet)

HSVDX:K4CEF-1} Connected to K4CEF (The K4CEF-1 switch
                                   informs you that the connect
                                   to K4CEF was successful)

Connecting through a KA-NODE is essentially an identical procedure, except that the KA-NODE includes a connect message with a prompt line, and indicates a successful connect with the message ### LINK MADE. Whatever the case, it is not possible to cover all possible network situations in this brief explanation, and you will in all likelyhood find it necessary to contact the PACKETCLUSTER SYSOP for detailed instructions appropiate to your particular situation.

ADDITIONAL INFORMATION FOR PACKRATT-64 USERS

The AEA PACKRATT-64 has a number of negative features which have caused severe problems. We would rather that none be used on the Network, but if you must, READ and UNDERSTAND the following information and perhaps you will be able to stay off of the SYSOPs LIDLIST.

The PACKRATT-64 does not store set-up parameters in BB RAM. If you have a disk drive, the parameters can be stored on disk in PARAMETER FILE 0, and when you boot up PACKRATT by typing "SYS33333" it will look for that file on the drive. If you have no drive, or if that parameter file is not present, then PACKRATT boots up with the default parameters which are not suitable for operation with PACKETCLUSTER.

If you have a disk drive, you should set the parameters and then save the set-up to disk as parameter file 0. If you have no drive, then you must

set the parameters each time you boot up by going to the packet parameter screen. Sorry, but that's the way it is. Simply typing MYCALL W4XXX will not do the job. The default parameters are:

AX25L2V2 OFF
DWAIT 2 (Units are 40 milliseconds)
FRACK 3 (Units are 1 second)
RESPTIME 12 (Units are 100 milliseconds)
TXDELAY 4 (Units are 40 milliseconds)
MYCALL PK64

These should be changed to:

AX25L2V2 ON (THE MOST IMPORTANT)
DWAIT 4
FRACK 8
RESPTIME 16
TXDELAY - 8 should be sufficient, but maybe longer
MYCALL - As appropiate

When the qso capture buffer is open (20K Bytes) it simply wraps around when it fills, FIFO. But - there is a screen hold function (Function key F1) which stops the screen from scrolling. The problem is that the buffer assigned to store incoming data while you have the screen hold on is only 1000 bytes long, or about 12 lines of 80-column text. When this buffer fills, then PACKRATT will send Receive-not-Ready packets in response to any incoming data and this will bomb PACKETCLUSTER. Hitting RUN/STOP and then using the BROWSE function will also cause the PACKRATT to send Receive-not-Ready packets and will also bomb PACKETCLUSTER.

June 25, 1989
N4KTY   A.K.A. Captain Packet

OPERATING COMMENTS

o Connect, following local procedures
o Stay connected!   Avoid short duration activity.Each connect-disconnect action sends your sign-on or sign-off to each node,increases backbone frequency traffic and slows down the CLUSTER.
o Monitor the CLUSTER when first starting to get a better understanding of its operation.
o Report any new and unusual DX activity. This is the primary purpose of the CLUSTER.
o Check your mail once or twice per week and delete it after reading.
o Use recommended CLUSTER syntax rather than common PBBS abbreviations. There may be different meanings.
o Use the HELP command whenever necessary to better understand intended Command. Record it locally at your station for future reference to avoid repeats.
o Don't leave your Radio & TNC on without the computer and its terminal communications software on as well.
o Be Patient! Sometimes the CLUSTER can be slow.
o The   CLUSTER does not support connection to outside PBBS or NTS routing.
o Word wrap is not supported. Send a <CR> at the end of each line of text.
o Recommended TNC settings:

RESPtime	:	1500ms
TXDelay	:	300-400 ms
AX25L2V2	:	ON
FRACK	:	5
RETRY	:	10
BEACON	:	OFF or DISABLE

LOCAL CONNECT INSTRUCTIONS:

Frequency: @   BPS
     Route:

DX PACKET CLUSTER

The DX Packet Cluster is an on-line multi-state interactive network of Amateur Radio stations. It is exclusively dedicated to promoting and enhancing the ability of its participants to engage in timely contacts with DX stations around the world.

This Guide is designed to provide the user, a quick reference for some of the more common commands which allow access to the Cluster's unique attributes, along with notes on getting started, operation and syntax requirements.

The Cluster consists of 14 individual Nodes located in Alabama, Georgia, Tennessee, Kentucky, North Carolina and South Carolina. Each Node can support between 25 and 50 stations and is attached to other Nodes via a central backbone frequency.   Thus the Cluster can theoretically represent the ongoing DX interests of up to 700 stations, simultaneously connected.

Because of its size, care must be taken by the individual operator to ensure that no actions are initiated that would be detrimental to the overall operation of the Cluster and connected stations.

WHAT DO I NEED TO USE THE PACKETCLUSTER?

Any average packet station will do. Basically, you need a
Terminal Node Controller (TNC), a 2 meter transceiver (use of
handy-talkies is definitely discouraged), and a simple CRT
terminal and keyboard. The latter requirement may be met by a
small personal computer running under some kind of terminal
software package such as is used to interface the computer to
a telephone modem. Simple programs are available for all the
popular types of personal computers. Many users have only,
"dumb" ASCII terminal connected to their TNC--and this
suffices quite nicely.

The CRT display associated with the terminal or computer
should have preferably, 80 columns since the information
presented is formatted that way. In the case of a personal
computer, some types are more prone to emitting radio-
frequency interference than others and this should be
examined before making your purchase. We have had some cases
where the emissions of the computer or terminal are so
horrendous as to make simultaneous and operation between an
HF radio and the packet network impossible and this greatly
reduces the effectiveness of this tool as an online aid.

Several TNC's are available and all operate basically the
same way, but, as with any equipment, some are better that
others. The most popular units are built by AEA, Kantronics,
and MFJ. DRSI also builds a TNC for the IBM PC and clones,
which is completely internal to the computer. All are
compatible with each other. Use of the PK-64 which plugs
directly into the Commodore 64 is discouraged as it has
several small quirks which make life difficult for the user
and the network, however some of these are being used on our
network quite successfully. Please remember, that whatever
you do on a multi-user network affects people on the entire
network.
If your equipment causes constant retires because it is not
tuned properly, or does not have the timing parameters set
properly, it takes up unnecessary time on the channel by
asking for the repeat of data. This slows down the entire
system--not just the individual user. Notes on all the above
are contained in the following section.

Most antennas are OK to use--it is important that you put a
nice clean signal into the system and have your deviation
adjusted properly--and it is fairly important that you are
heard by as many users around you as is practical--this
nature of packet is such that it does its best to avoid
collisions with other packets--and that means it is necessary
that other DXers on the system hear you as well as making
sure the network node hears you--so DO put in a decent
antenna--beams are best--no rubber ducks!!

A user owes it to himself and to the other users of the
network to enter the system with a thoroughly debugged packet
system. The network is NO PLACE to learn packet. READ YOUR
MANUAL and experiment some on a simple frequency with a
friend. Learn to use the bulletin boards and digipeaters on
145.01. Only then should you tackle the network! It is a
sophisticated system , very user friendly, but delicate,
which can be brought to its knees by a poorly adjusted or
poorly operated packet station.

HOW DO I GET INTO THE PACKETCLUSTER?

Once you feel you are comfortable and somewhat competent with
the packet equipment, have tried out several packet QSO's,
have the basic of adjusting your timing parameters down, and
have read your manual, you're ready to tackle the network.
The frequencies are 145.75 and 147.585. I try and have the
users that access the node directly on 147.585. The
frequency is 145.75 is used primarly for users connecting
in via a netrom. Put your 2 meter radio on either frequency,
make sure your radio is in simplex mode. Put your TNC in
COMMAND mode (CMD:) and type CONNECT KB4HU <carriage return>.
If you are close enought to connect direct you'll get an
immediate response. If you cannot reach KB4HU directly,
the net/rom connect procedures are, from the (CMD:),
C NASDX4. You will get a connected to NASDX4/K4UVH-4. Once
you are connected to the net/rom you will enter C KB4HU.
NETROMS are located in Murfreesboro (NASDX), Ridgetop
(NASDX4), and Bowling Green (BGNDX) on 145.75 and Franklin
FKLNDX on 147.585. When the PacketCluster responds, you will
be given a welcoming message from the Middle Tenn DX Packet
Network and told to type a ? of an H for additional help. If
you do this, the system will respond with a menu of commands
and a very brief description of each, that will allow you to
use the network. For starters, try a SHOW/CLUSTER. When you
type this in, the system, will respond with a totals table
that lists all of the folks, who are connected to the system
at the moment, with the number of nodes, local users and
system user connected at that time. After you try this, you
can then type in SHOW/DX. The system will respond with the 5
latest entries from the DX log--these contain the Call,
Frequency, Date and Time of the entry and the call letter of
the Dxer who entered it.

144.93

After this, you can just sit back awhile and peruse the list-
but stay connected. If things are normal, the others on the
system will be entering DX periodically, and this will flash
immediately onto your screen along with a 'BEEP' from your
terminal to alert you that there is new DX data coming in.
This data is being entered in real-time by the other users of
the system and you are able to enter it also when you feel a
little more comfortable.

Early on, you should do a SET/NAME and put you name into the
user file. Also do a SET/QTH followed by you city and state
and a SET/LOCATION on which you specify you latitude and
longitude--help is available on this so you can get the
format right--this data is used for the online Heading and
MUF calculations you'll find out about in the following
sections.

There are a whole repertoire of instructions--a list of them
and a description of each is contained in the excerpt from
the Pavillion Software PacketCluster manual which we've
included. If you are online and forget the details of one of
the commands, simple type HELP followed by a space and the
command you're having trouble with, and a help file will
appear on your screen. To save time use this manual.

Using the system is like anything else--it takes practice--
and we understand that. There are so many things available
here that it can do, that it takes time to learn them all--
and they will truly amaze you--yet they are all basically
very simple--and your DXer friends are already doing it--
people who, like yourself, had no acquaintance at all with
packet, or digital communication in general a few weeks ago
and who are, today, using the system with great ease.

Bear in mind that, though there a lot of things the system
will do, the MAIN FUNCTION is as an alert tool--and what
makes this valuable, is the fact that a lot of the folks
doing the alerting are DXers in other parts of the south that
are not available to us on the voice repeater--they are far
away, hearing different things that we can hear here at
different times and different propagation conditions. They
talk to different people every day than we do and propagate
different rumors! Typically, the Atlanta and Charlotte folks
hear things a bit earlier than we do--particularly on the low
bands--they have sunrise and sunset an hour earlier than we
do, so they are excellent help as to previewing what you'll
hear in a little while!

WHAT DATA IS AVAILABLE ON THE PACKETCLUSTER?

As we said a list and description of the commands follows in
the book but some of them are summarized below.

SHOW/DX lists the latest 5 DX entries. You can modify this if
you like and get more, say 12, by doing a SHOW/DX/12. You
can make it band selective, if you like, by typing in SHOW/DX
15. Note the space there--that will give you 15 meter entries
only. You can also use these command to search the DX
database for information on times, dates and frequencies for
stations you're seeking--such as SHOW/DX 40 VS6 which will
list the last 5 40 meter VS6 entries! This is a terrific
search tool. No longer will you have to ask on the repeater
if anyone can remember the time or frequency a station last
appeared--it is right here and available on your packet
terminal! Help is as close as typing HELP SHOW/DX.

SHOW/SUN is for the lowbanders. This command is followed by a
prefix--anything from the countries list. Example is SHOW/SUN
ZL which shows you today's sunrise and sunset times in New
Zealand!

SHOW/MUF followed by a prefix shows you the maximum and
minimum usable frequencies to that country for the current
clock time--a great on line tool for scheduling your contacts
on another band.

SHOW/HEADING followed by a prefix gives you the great circle
route heading based on your own latitude and longitude--
online help for which way to point the beam. It also gives
you the distance in statute miles for the path and indicated
the CQ Zone Number (1 thru 40), in which the country resides.

SHOW/USERS gives you an immediate list of all the people
currently connected to the system. Typically, when you do a
SHOW/USERS you will see the calls of 90-125 other DXers who
are currently logged onto the network. SHOW/USER, followed by
a call, will search the user file and respond with that
person's name and QTH of he has entered it. We keep this file
online all the time.

SHOW/CONFIGURATION is a variation on SHOW/USERS--gives you
the same data, by shows you which user is connected to which
node--i.e. a list of all the users on the Huntsville (K4CEF)
node, followed by all the users on the Charlotte (KD4IL)
node, Atlanta (W8ZF), Newman (W1UA--west central Georgia),
two additional Atlanta nodes (AB4AE and K4KG), Chattanooga
(W4KAU), Knoxville (AG4M), Lexington (N4TY),and Nashville
(KB4HU) nodes also Birmingham is online.

Enter DX into the system by typing DX callsign frequency.
You may also enter it as DX frequency callsign--the order
does not matter.

The information you enter will be distributed to all the
other users in the system and the system will automatically
append today's date, the time (UTC), and your call, and enter
it into the DX log file. There is also space for remarks as
necessary. An example would be:

                DX VK9ZW 14020 Good signal--LP
                            or
                DX 14020 VK9ZW Good signal-LP

The information will be distributed to the rest of the
network and appear on all the other user screens in the
system as follows:

DX de AA4DO:14020 VK9ZW Good signal--LP 22-Jan-1989 0242Z

SHOW/WWV will give you the 5 latest WWV propagation report
entries including the Solar Flux, A Index and K Index along
with the forecast. This data is also used in the SHOW/MUF
calculations.

There is also a SHOW/OBLAST command for those interested in
finding out what oblast a given Russian callsign is in. You
can do a SHOW/OBL followed by a return to get extra help on
this one.

You can use the TALK command (TALK callsign) to send a
message to anyone in the user list--regardless of which city
hs is in--the computers do the work of message routing etc.
There are two kinds of Talk command--the full Talk mode is
entered by doing a TALK followed by a callsign and a carriage
return. This puts you in the Talk mode until you type a
Control Z and terminate it--it is used when you intend to
carry on a brief conversation with someone that may encompass
several lines. Remember that anything you type from here on
out is sent to that person--so it takes special care, once
you're in Talk mode, to do a SHOW/USERS or a SHOW/DX. You
must preface this with a * or else the person you're Talking
to sees a SHOW/DX suddenly on his screen.

The second type of Talk mode is used for simple one line
messages and in by far the most often used. Talk callsign
followed by a one line message before the carriage return
will accomplish a lot. Again, you can do on e of these to
any user and send him brief message.

ANNOUNCE will make an announcement to everyone on the
network--on all nodes. This is good for notices of DX
interest such as:

ANNOUNCE FR5DX will be on 28510 at 1530Z tomorrow.
You may also announce selectively by node by typing
ANN/NODECALL (the callsign of the node where you wish to make
the announcement). And example:

            ANN/KB4HU DX net at 0900Z 145.29.

ANN/K4CEF Can someone get Bart on. New country for him.
ANN/FULL Will make a system wide announcement.

We have added a few commands on out own to the Cluster:

SHOW/QSL callsign -- An online QSL managers directory. This
will search the online file to see if we have the QSL manager
you're looking for/ If we have a direct address or a manager
listing, we will send you this information in the next
packet. this is not intended to be as complete as a W6GO
Directory would be, but we do provide current information on
a great many of the more popular Dx stations and expeditions.

SHOW/ROSTER callsign-- an online name, address and telephone
member listing for each user of the Nashville node.

SHOW/NEWS This information is loaded weekly from the most
recent QRZ DX bulletin highlights.

SHOW/NEED This will display all the users who would like to
be notified that a specific station is on.

The DX PakcketCluster contains an excellent online mail and
BBS service. It can be used to send mail to users which are
anywhere in the network. Forwarding of mail and bulletins is
automatic between nodes, and it is not necessary to know the
location of the station you're sending mail to.
The following commands are used to operate the bulletin board
from within the Cluster:

SEND callsign -- initiates a mail message to the station
specified. The Cluster will prompt you for a subject, and for
your text. Terminate the message with a Ctrl Z or /EXIT on a
separate line.

READ -- When your told that you have mail waiting when you
sign on, you can type READ and get the oldest message that is
directed to you. When you finish, you can type REPLY,
REPLY/DELETE, or READ again. If you type READ again, you'll
get the next oldest message for you. READ followed by a
message number, will transmit the contents of that message to
you.

REPLY -- allows you to reply immediately to a message you have just read. The Cluster prepares the heading and the subject line. REPLY/DELETE will prepare your reply, and delete the message you're replying to when you're finished sending.

DELETE -- This deletes the message you just read, or, when followed by a message number, deletes that message if you are the sender or the recipient.

DIRECTORY -- Sends you a directory of the last 5 messages on the BBS. DIRECTORY/ALL will send you the entire directory. DIRECTORY/NEW gets you the new entries, in the directory since the last time you issued a DIRECTORY command, and DIRECTORY/OWN will display on the titles of messages addressed to you, or sent by you.

SHOW/FILES -- shows you the contents of the FILE area. You may read any file with the TYPE command.

SHOW/BULLETIN -- shows you the contents of the bulletin area. We keep current DX and propagation bulletins here for downloading.

READ/FILES filename -- will send you the file you require.
READ/BULLETIN filename -- send you the selected bulletin.

REMEMBER -- Help on any of the above commands is always online and contains much more information than is given here. The enclosed excerpt from the Cluster manual also is a handy reference for information.

PLEASE REMEMBER that you are sharing this network and its resources with your other DXer friends--be considerate of them--do not hog the airtime with needless ragchewing--keep it brief and DX related, keep your equipment operating properly and adjusted correctly.

By the way when you wish to remain connected, but not in the shack enter a SET/NOHERE and a set of parentheses is placed around your call in the user list signifying your un-availability at the moment. When you return, in a SET/HERE and they are removed.

Any assistance you need, just to a Talk KB4HU and 1 will do my best to be of assistance if I'm online.

(Soya Wanna Get on Packet)

For Aspiring DX PACKETCLUSTER Participants

The present Southeast PACKETCLUSTER Network consists of seven Nodes and a
number of digital repeater switches. The Nodes, running a software
package hosted on an IBM PC, are located in Nashville, TN (KB4HU),
Huntsville, AL (K4CEF), North Atlanta (W8ZF), South Atlanta (W1UA),
Chattanooga (W4KAU), Knoxville (AG4M) and Charlotte, NC (KD4IL). The
nodes are all interconnected in real-time, and a user on any node has
access to DX information called in by ALL the users on the network. The
mode of communication inter-Node and between users and Nodes is Amateur
Packet Radio. This is a digital communications medium whose primary
distinguishing characteristics are: 1. Data transmissions from a station
are sent in short bursts, or PACKETS and 2. Two stations are CONNECTED to
each other under a set of rules called AX.25 Protocol which allows error
checking and re-transmission if necessary. The transmission medium of
choice is 1200 baud AFSK or 2400 baud PSK using ordinary 2-meter radios.

At present, each node operates on a different, local frequency, which is
coordinated within that node's respective state. Locally, we operate on
TWO frequencies -- 144.93, and 145.75 mhz. Each PACKETCLUSTER Node can
support up to 50 users. A user COMMANDS his packet station to establish a
connection to the Node, and thereafter commands are sent to the
PACKETCLUSTER Node as CONVERSational text by typing on a keyboard. The
commands are interpreted by the Node and the appropiate response is sent
back to the user and appears on the terminal screen.

The necessary equipment for operating as a PACKETCLUSTER user is a
terminal or computer with a simple terminal program, a 2-meter
transceiver capable of operating on the local PACKETCLUSTER frequency,
and a Terminal Node Controller, or TNC. The TNC interfaces to the
terminal or computer via a digital interface and ASCII data flows between
the two. The TNC interfaces to the 2-meter rig via three lines. Audio is
fed from the TNC to the radio microphone input, audio is fed from the
radio speaker output to the TNC audio input, and a PTT line from the TNC
to the radio keys the transceiver.

There is absolutely no need to use a computer as a terminal unless you
happen to have one around that you don't mind dedicating to
PACKETCLUSTER. But running a Turbo PC/AT with PROCOMM or XTALK is a bit
of overkill. PACKETCLUSTER maintains all the necessary information in its
own files, and so there is no real need for a "smart terminal" emulator
with upload and download capability. A "dumb terminal" is all that is
required.

The primary consideration is that your TNC should support AX.25 Level 2
Version 2 Protocol. If it does not, you will not be able to interface
with PACKETCLUSTER. All TAPR-2 TNCs and clones (MFJ-1270, AEA PK-80,
PACCOMM 200s) running version 1.1.2 or higher, all Kantronics running
version 2.0 or higher support this protocol. BUT -- There is a command
called AX25L2V2 which MUST BE ON. The TNC may come from the factory with
this command defaulted to OFF. It MUST be ON!

A second consideration is what kind of computer or terminal you are using. All TNCs support an RS-232 terminal interface. However, the venerable Commodore-64 does not have a true RS-232 compatible interface, but rather a C-64 terminal program programs the user port (the edge connector on the left rear as you are looking from the front) to support ASCII communications with TTL levels (0 and 5 volts). All Kantronics TNCs, the MFJ-1270 and 1274, and the PACCOMM 220 (Not the 200) make provisions for a TTL interface. So if you plan to use a C-64 with a terminal program you should consider one of the TNCs that supports TTL interface. Alternately, you can get a TTL-to-RS-232 converter for the C-64 but they tend to be rather expensive, on the order of $40.00.

The next consideration is a good antenna system. You will not be successful using a rubber duck on a H-T or a mag-mount on top of the desk. Packet is VERY suceptible to multipath distortion, and a good outside antenna is a must. Assuming you already have a 2-M antenna on the tower for a voice repeater, add a second one dedicated to packet, the higher the better. If vertical space is a problem, the 4-element Cushcraft 147-4 makes a good antenna. If you have a reasonable chance to communicate with the PACKETCLUSTER Node directly rather than through a digipeater or node switch (see below), then make every effort to do so. It makes the network more efficient. It is also important that you can hear as many of the other-users as possible to reduce the chance of collisions (two packets being transmitted at the same time) and this as well argues for a good antenna system.

Now, this will not be a dissertation on how to operate packet. But, READ YOUR MANUAL and especially learn the difference between COMMAND and CONVERSE mode. In COMMAND mode you are talking to the TNC and anything you type is interpreted as a command by the TNC. In CONVERSE mode you are talking to the world and anything you type is interpreted as text and is sent out over the air as a packet when you hit a carriage return (C/R). You get into COMMAND mode by typing CRTL-C (C/R), and you know you are in COMMAND mode because the TNC sends the prompt cmd:. If you are in COMMAND mode you get into CONVERSE mode by typing the command CONVERSE (or CONV for short). If you are in CONVERSE mode and you wish to return to COMMAND mode, this is done by typing CONTROL-C (Holding the CTRL key down while simultaneously typing a "C") The PACKRATT-64 and some special terminal programs for the C-64 use one of the function keys F1-F8 to move back and forth between COMMAND mode and CONVERSE mode. But remember, if you want to tell the TNC to do something you must be in COMMAND mode, and if you want to tell PACKETCLUSTER to do something, you must be in CONVERSE mode.

One of the big problems we have found is that many users feed a signal from their TNC to their radios that is too high in level. The result is overdeviation, distortion, and in general it doesn't work. Most 2-M radios have limiter diodes somewhere in the audio path and if your input audio level is too high you will be slamming up against the limiter diodes and feeding square waves to the modulator. On the air it sounds like a demented buzz-saw. Most modern 2-M rigs that use an electret microphone require an audio level somewhere in the range of 10 to 20 millivolts peak-to-peak.The best way to set it up is to set the deviation to 3.5 - 4.0 khz with a deviation meter.

But you don't really need a deviation meter. TNCs have a "CALIBRATE" or similar command which allows you to key the rig and send a packet tone. Listen to your transmitted signal with another rig, and turn up the level until the perceived volume stops increasing. At this point, you are up against the limiter diodes. Now back off the input level (level of audio from the TNC to the 2-M radio) until you hear the perceived volume decrease. Turn it down a bit more, and you will be close enough for all practical purposes. The audio should sound clean with no distortion or harshness. TAPR-2 clones have an adjustment pot on the board, and PACKRATTS have an adjustment accessible through a hole in the side of the unit. Kantronics TNCs have two fixed output levels selectable with a jumper, and if one of these does not work you may have to open up the 2-M rig and find the mic gain control. If this is necessary, be sure you adjust the mic gain control and not the deviation control. The mic gain control is before the limiters and the deviation control is after the limiters.

There are several timing parameters which you need to set properly. In the discussion to follow, the times will be given in milliseconds, but the units of various timing parameters vary according to the TNC. Check your manual for the proper conversion.

TXDELAY is the delay interval between key-up and start of data transmission. Normally 300-400 milliseconds is adequate, but some 2-M rigs take a bit longer to get up to speed after the keying line is asserted. If you seem to be having a problem being heard and all else seems OK, try increasing TXDELAY to 400-600 milliseconds.

PACKETCLUSTER sends a group of packets to users in a single transmission. The node switch or digipeater immediately repeats those that it has been asked to, but after the carrier drops there can be a problem if everyone tries to ACK at once. Therefore the parameters RESP (Response Time) and DWAIT are assigned to individual users to allow staggering of ACKS. RESP is the time delay between reception of a packet and transmission of an ACK, and DWAIT set the delay between when activity is last heard on the channel and key-up. You will be requested to set values of RESP and DWAIT in milliseconds, and don't forget to convert to get the proper value to command into your TNC. For example, if you have been asked to set DWAIT to 600 milliseconds and the units of DWAIT for your TNC are 10 milliseconds, then you would command DWAIT = 60.

Kantronics Firmware Version 2.82 and later has the commands PERSIST and SLOTTIME, which help enormously in avoiding collisions. PERSIST sets the probability that a packet will be transmitted at a given time, and SLOTTIME governs the interval between transmission trials. Initially PERSIST should be set to 64 and SLOTTIME to a value of 10, which is equivalent to 100 milliseconds.

FRACK should be set to 5 and RETRY to 10. FRACK sets the number of seconds between retries and RETRY sets the number of times your TNC will retry a packet before it gives up. Remember to set AX25L2V2 ON, or you will bomb the system. NEVER, NEVER, NEVER send an XOFF (CTRL-S) to your TNC without clearing it with an XON (CTRL-Q) ASAP. You may use an XOFF, for example, to stop information scrolling on your screen, but don't leave it that way for long. The problem is that your TNC buffer can fill up and if PACKETCLUSTER tries to send additional information your TNC

will send a RNR (Receive not Ready) packet and cause PACKETCLUSTER to die
a horrible death. As well, this sort of thing could happen if you are
loading text into a capture buffer of a terminal program and the capture
buffer fills, causing the terminal program to send an XOFF to the TNC.

If all of this sounds preachy, you must remember that when you check into
PACKETCLUSTER you become part of a six-state network involving seven
nodes and many users. If your setup is marginal requiring a lot of
retries (retransmission of packets) or if you do something to bomb the
system then you are affecting a real-time network. Not quite the same as
a keyboard-to-keyboard QSO or logging into a packet bulletin board system
where only yourself and one other entity are affected. The PACKETCLUSTER
Network IS NOT the place to check out your packet system or to learn how
to use it. You can always arrange to go off on another frequency with
another packet operator for your on-the-job training. You do not have to
be a computer expert to successfully operate packet radio, but it does
require more committment than just picking up a 2-M Hand-Held and
blathering drivel over the local voice repeater.

SUMMARY OF TNC SETTINGS

AX25L2V2 ON
DWAIT 500 Milliseconds
RESP 1500 Milliseconds
TXDELAY 300-400 milliseconds should be sufficient
FRACK 5
RETRY 10
PERSIST 64 (If applicable)
SLOTTIME 10 (If Applicable)

The local PACKETCLUSTER SYSOP may request you to change one or more of
these parameters. You will, of course, be familiar with these commands
and will cheerfully comply with the SYSOPs request.

****

CONNECTING TO PACKETCLUSTER THROUGH RELAY STATIONS

If unable to connect directly to a PACKETCLUSTER Node, it will be
necessary to use some form of relay station or node switch. There are
three possibilities; DIGIPEATERS, NETROM/THENET NODES, and KANTRONICS
KA-NODES.

A DIGIPEATER is, as its name implies, a digital repeater that simply
repeats packets. The snytax for establishing a connection through a
Digipeater is CONNECT K4CEF VIA N4KTY-1, where N4KTY-1 is the callsign of
the digipeater. Most times digipeaters will have an SSID other than 0 (no
SSID) to distinguish it from a home station with the same callsign. (For
more information on digipeaters, see your TNC manual).

NETROM/THENET Nodes and KA-NODES are advanced "Level 3" switches that
greatly facilitate movement of packet traffic. To use these devices, you
first connect to the "switch," and then instruct the switch to connect to a

Southeastern Emergency Digital Association Networks "SEDAN"

ROSE SWITCH NETWORK MAP

THIS MAP MAY BE FREELY COPIED AND DISTRIBUTED AS AN AID TO
THE ROSE NETWORK USER TO MAKE A CONTACT, FOLLOW THIS SIMPLE
CONNECT FORMAT:

C [Target Station Call] V [Local Rose Call] [Destination ROSE ADDRESS]

C [KD4BNW] V [N9IBS-3615452]

SEND CHANGES AND UPDATES TO:
BUCK ROGERS K4ABT
1584 OXFORD COURT
GALLATIN, TENNESSEE
37066

REV 29

OKLAHOMA

KANSAS

TEXAS

LOUISIANA

ARKANSAS

MISSOURI

MISSISSIPPI

ALABAMA

TENNESSEE

KENTUCKY

GEORGIA

FLORIDA

NORTH CAROLINA

SOUTH CAROLINA

VIRGINIA

W VIRGINIA

ILLINOIS

254-4591
turkey